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USSR Report

LIFE SCIENCES

BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 33

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BIOCHEMISTRY

UDC 577.1:547.963

GLOBULAR STRUCTURE OF BACTERIOPHAGE λ CRO REPRESSOR IN SOLUTION

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 266, No 3, Sep 82
(manuscript received 8 Aug 82) pp 738-741

KIRPICHNIKOV, M. P., KUROCHKIN, A. V. and BAYEV, A. A., academician;
Institute of Molecular Biology, USSR Academy of Sciences, Moscow

[Abstract] Proton (H^1) nuclear magnetic resonance is used to study the cro-protein structure of the title repressor in solution. The spectrum of the cro-protein is characterized by the presence of displacements in the resonances of methyl groups of the side chains of aliphatic amino-acid residues in the region from -0.24 to 0.56 MD (millionth parts). Two signals located in the aliphatic field, 2.13 and 2.10 MD probably represent methyl protons on two methionine moleucles. In acidic solutions, a chemical signal at 1.35 MD is observed, which is spin-spin coupled to a quartet at 4.13 MD. The former is assigned to $C^{\beta}H_3$-group of the (-terminal alanine--Ala-66. Other weaker signals are discussed, together with changes observed in the signal on heating or with changes in the pH. Data support a globular structure for cro-protein in solution. Figures 4; references 13: 2 Russian, 11 Western.
[82-12027]

UDC 576:547.963.3

TEMPLATE-FREE SYNTHESIS OF POLYPEPTIDES FROM AMINOACYL-tRNA ON ESCHERICHIA COLI RIBOSOMES

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 266, No 3, Sep 82
(manuscript received 23 Apr 82) pp 741-745

TNALINA, G. Zh., BELITSINA, N. V. and SPIRIN, A. S., Academician;
Institute of Protein, USSR Academy of Sciences, Pushchino, Moscow Oblast

[Abstract] The title polypeptide synthesis is carried out with purified E. coli ribosomes in a 0.02M tris-HCl buffer (pH = 7.6 at 37°C), containing

0.1M NH_4Cl, 0.0001M EDTA, 0.001M dithiotreytol and $MgCl_2$, ranging from 0.005M to 0.02M. Each sample representing a volume of 0.05 ml contains 20 pmol of ribosomes, 170 pmol EF-Tu, 37 pmol EF-G, 220 pmol of (^{14}C)-aminoacyl-tRNA, 8-16 nmol GTF, 100 nmol of phosphoenolpyruvate and 1 microgram of the protein of phosphoenolpyruvatekinase. The solutions are incubated at 37° for 30 minutes. The amount of radioactive amino acids incorporated into the ribisomes is then calculated from the activity. For the 16 amino acids tested, lysine and serine show the greatest incorporation (7.2 and 4.5 pmol respectively). Glutamic acid, methionine and isoleucine show virtually no incorporation. Values for the other amino acids range from 1 to 2 pmol. The optimum Mg concentration for amino acid incorporation is about 0.01M. Figures 2; references 13: 2 Russian, 11 Western.
[82-12027]

UDC 576.851.45.098

EFFECT OF GROWTH TEMPERATURE ON SIALIC ACID METABOLIZING ENZYMES IN PLAGUE BACILLUS

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 44, No 6, Nov-Dec 82 (manuscript received 14 Dec 81) pp 49-53

SHIMANYUK, N. Ya. and MISHAN'KIN, B. N., Rostov-on-Don State Scientific Research Anti-Plague Institute

[Abstract] Four avirulent and two virulent strains of Yersinia pestis were grown at 28 and 37°C to test the effects of growth temperature on the sialic acid content and the activities of two enzymes involved in sialic acid metabolism. The results showed that cultivation at 37°C depressed sialic acid concentration in the bacteria to 10-30% of the level in bacteria grown at 28°C. Concomitantly, at 37°C the activities of neuraminidase (EC 3.2.1.18) and sialic acid aldolase (EC 4.1.3.3) were greater than at 28°C. The data were interpreted to indicate that Y. pestis contains two enzymes involved in sialic acid metabolism and that further studies should be conducted with mutant strains of this microorganism to determine their exact roles in the metabolism of sialic acid. Figures 2; references 17: 1 Polish, 7 Russian, 9 Western.
[163-12172]

UDC 591.174.3+598.2

FUNCTIONAL MECHANICS OF AVIAN WINGS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 266, No 3, Sep 82
(manuscript received 4 Jun 82) pp 726-729

BORIN, A. A. and KOKSHAYSKIY, N. V., Institute of Evolutionary Morphology and Ecology of Animals imeni A. N. Severtsov, USSR Academy of Sciences, Moscow

[Abstract] The main question is whether there is any type of structure, possibly elastic, in the avian wing which can store and then release energy. No clear correlation can be documented between the stroke frequency and the flight speed. Equations are derived initially equating the stroke frequency of the wing to a resonance, described in terms of the weight and rigidity of the wing. However, the absolute rigidity is not constant and the obtained results are not characteristic of a system containing an elastic component. Additional equations are set up to include factors such as deformation, vertical translation, turbulence and mass of both the wing and the body of the bird. It is concluded that the approximate constancy of the stroke frequency for birds is due not to a resonance system, but to aerodynamic, mechanical, and in part physiological factors. Figure 1; references 12: 1 Russian, 11 Western.
[82-12027]

UDC 576.8.095

MATERIAL AND ENERGY BALANCE IN MICROBIAL BIOSYNTHESIS

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 44, No 6, Nov-Dec 82
(manuscript received 18 Nov 81) pp 6-11

MINKEVICH, I. G. and YEROSHIN, V. Ye., Institute of Microbial Biochemistry and Physiology, USSR Academy of Sciences

[Abstract] Mathematical treatment is given to material and energy factor balance in microbial synthesis in order to provide criteria for estimation of the maximum product yield ($Y_{P/S}$; kg/kg) from a given substrate for aerobic and anaerobic processes. Maximum product yield is constrained by the fact that the energy content of the substrate. The energy balance can be calculated on the basis of the redoxon (RO) concept, which represents a fourth of an oxygen molecule that corresponds to the unit valence of one accessible electron, i.e., 1 RO = $-1/4\ O_2$. Examples are provided of estimations of maximum yields of organic products in relation to metabolic factors such as expenditure of ATP on maintenance of cellular activity, utilization or formation of high energy bonds during synthesis, efficiency of the respiratory chain, and the expenditure of ATP, GTP, etc., during biomass synthesis. Figures 5; references 7: 4 Russian, 3 Western.
[163-12172]

EPIDEMIOLOGY

PROTECTION FROM INFLUENZA

Tashkent PRAVDA VOSTOKA in Russian 7 Jan 83 p 4

[Article by Professor and Doctor of Medical Sciences V. Madzhidov: "How to Protect Oneself From Influenza"]

[Text] Perhaps the highest level of influenzal morbidity is noted in the productional sphere.

The explanation here is simple. Industrial enterprises are sites of close contact between people, which greatly facilitates infection with this viral infection and with other similar diseases.

Usually the disease begins one to two days after infection, but sometimes after several hours. Probability of this is especially high in people whose body lacks protective antibodies against the influenzal virus, and also, in people that are weakened and unconditioned.

The most dangerous for surrounding people are patients with the pulmonary form of influenza, which is manifested as a slight indisposition, coughing, nasal cold, weakness.... Carrying influenza while remaining active, such sick people become sources of infection for their associates during epidemic periods.

Some people do not consider influenza to be a serious disease and attempt to ignore it--they go to work and do not take treatment. Others, in contrast, take treatment by all acceptable and unacceptable means. This is why timely resort to medical aid is very important both for the health of the patient himself and for the helath of the surrounding people. To be sure, treatment by any means is simply dangerous. The adherents of self-treatment should remember that the popular sulfanilamide preparations and antibiotics--sulfadimidine, sulfaethidole, tetracycline, erythromycin and others--are totally ineffective during influenza. Taking them is not only senseless but also harmful. The use of such preparations is justified only during the threat of postinfluenzal complications, but, I repeat, such a treatment should only be prescribed by a physician.

The effectiveness of treatment is in many ways dependent also upon the patient himself, upon how strictly he follows the specific regimen and other recommendations of the doctor.

What complications does influenza threaten? There are no specific complications for each form of influenza. As a rule, the weakest, already-diseased organs are afflicted. If the person suffers, for example, from chronic pneumonia, it is to be expected that influenza will produce complications specifically in the lungs.

Can influenza somehow be prevented? Yes, it can be. Conditioning, physical exercises in fresh air, walks, ventilation of buildings--all this helps to protect from influenza. Drafts and overexhaustion should be avoided, one should try to eat more vegetables and fruits, to drink juices; in a word, to vitaminize the diet in every way possible.

A major role in the struggle with influenza at industrial enterprises belongs to vaccines against influenza. They are given well in advance, usually in the autumn (in October--November). In no case can one refuse vaccination without a physician's release.

Nevertheless, at times we hear: "These vaccines don't do anything. I received a vaccine and I still got sick."

Most people do not come down with influenza after vaccination, but if this does happen the disease is borne more easily. There are almost never complications. These stories have the following source. Frequently mistaken for influenza are all kinds of respiratory diseases caused by adenoviruses and parainfluenzal and other viruses, against which the vaccine is ineffective. Distinguishing the diseases from one another is frequently difficult even for a physician, but the treatment of influenza and the treatment of general respiratory diseases, wtih slight exception, are identical: bed rest and overall-fortifying and vitamin preparations.

The body's resistance plays an important role in protection against influenza. It frequently declines in most people during the winter period, especially sharply in people that are weakened and unconditioned. Then, any overexertion, chilling of the body, nonrational nutrition and previous and chronic diseases sharply lower the body's resistance and increase the probability of influenzal infection.

Influenza comes to us with colds: coughing, nasal cold, high temperature, By conscientiously caring for one's own health and taking in good time the forementioned measures for protection against influenza, one can protect oneself from the disease.

9942
CSO: 1840/217

UDC 616.092.9

FORMATION, PERSISTENCE, AND REVERSION OF CHOLERA VIBRIO L-FORMS IN EXPERIMENTAL ANIMALS

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 44, No 6, Nov-Dec 82
(manuscript received 31 Jul 81) pp 79-84

LOMOV, Yu. M., TYNKEVICH, N. K., BICHUL', K. G. and GOLUBKOVA, L. A.,
Rostov-on-Don State Scientific Research Anti-Plague Institute

[Abstract] Studies were conducted on the formation, persistence, and reversion of El Tor vibrio L-forms in outbred rabbits that sustained experimental infections of the gallbladder with intact bacteria or L-forms. Evaluation of the animals over a 120 day period showed the persistence of the L-forms and isolation of L-forms from animals infected with intact El Tor bacteria in the absence of antibiotic treatment. These observations provide confirmatory data for the possible persistence of cholera vibrios in the L-form for prolonged periods of time, a factor of key importance in the detection of carriers. Figures 1; references 11: 10 Russian, 1 Western.

[163-12172]

UDC 582.281.21:616.99+614.449

DISSEMINATION OF ALTERNARIA NEES FUNGI BY MURIDS

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 44, No 6, Nov-Dec 82
(manuscript received 12 Oct 81) pp 42-49

GAYEVAYA, V. P. and TRIKOZ, G. A., Vinnitsa Medical Institute
imeni N. I. Pirogov; Kiev State University

[Abstract] Mycological studies were conducted on nine species of murids and their ectoparasites (gamasid mites) to detect the prevalence of Alternaria fungal spores in their ear auricles. The investigation was conducted over a two year period (1979-1980) during winter and summer seasons, with murids collected from various areas. The results showed that the

highest incidence of spore isolation occurred in the summer from murids captured on croplands. The predominant species isolated both from the murids and the mites was Alternaria alternata. It appears that murid control may be of value in controlling the spread of pathogenic species of Alternaria. Figures 5; references 30: 6 Ukrainian, 23 Russian, 1 Western.
[163-12172]

UDC 576.858.77

ANALYSIS OF PROTEINS OF IRIDESCENT VIRUS DERIVED FROM AEDES CANTANS MOSQUITO

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 44, No 6, Nov-Dec 82 (manuscript received 24 Sep 81) pp 77-79

BUCHATSKIY, L. P., KUZNETSOVA, M. A. and SHERBAN, S. D., Kiev State University

[Abstract] Iridescent virus isolated from Aedes cantans mosquito showed the presence of nine proteins on disc electrophoresis in acrylamide gel, which ranged in MW from 16,500 to 95,000 daltons. This article presents a table incorporating the results of amino acid analysis of total viral protein. Figures 2; references 8: 1 Ukrainian, 3 Russian, 4 Western.
[163-12172]

GENETIC ENGINEERING

UDC 575.1

CHARACTERIZATION OF HYBRID PLASMIDS CARRYING GENES OF COLICINOGENIC PLASMID ColIb-P9 RESPONSIBLE FOR COLICIN Ib SYNTHESIS AND RESTRICTION OF T5 PHAGE GROWTH

Moscow GENETIKA in Russian Vol 28, No 10, Oct 82
(manuscript received 11 Feb 82) pp 1581-1589

VOROB'YEVA, I. P., LIPASOVA, V. A., GORLENKO, Zh. M. and KHMEL', I. A.,
Institute of Molecular Genetics, USSR Academy of Sciences, Moscow

[Abstract] A set of hybrid plasmids with ColIb-P9 fragments determining colicin Ib synthesis and immunity and restriction of T5 phage growth were obtained in *Escherichia coli* strains with use of restrictases EcoRI and HindIII and the vector plasmid pBR325. Genes coding for colicin synthesis and immunity are closely linked on an EcoRI fragment with a molecular mass of 1.85 Mdaltons (pIV41) or on a HindIII fragment with a molecular mass of 2.4 Mdaltons (pIV1). The DNA region coding for colicin synthesis was resistant to various restriction endonucleases, except EcoRI and HindIII. An increase in spontaneous and mitomycin C-induced colicin synthesis and greater immunity were observed in clones containing these plasmids. Genes responsible for T5 phage growth restriction were located on other restriction fragments of ColIb DNA: EcoRI fragment with a molecular mass of 1.45 Mdaltons (pIV7) or HindIII fragment with a molecular mass of 4.3 Mdaltons (pIV5). The presence of Col^{+}Imm^{+} hybrid plasmids did not produce an abortive T5 phage infection; this indicated that restriction of T5 phage growth is not related to colicin Ib synthesized within phage-infected cells, but is controlled by one or more specific plasmid products. Analysis of proteins synthesized in vitro with plasmid pIV18 (Col^{+}Imm^{+}T5In^{+}) revealed a protein with a molecular mass of 36,000 Mdaltons, which participates in phage restriction. Plasmid pIV41 directed the synthesis of a protein with a molecular mass of 67,000 Mdaltons and three other proteins, one with a molecular mass of 13,000 Mdaltons and two others weighing less than 10,000 Mdaltons. These were believed to be involved in colicin Ib immunity and colicin gene repression. Figures 3; references 28 (Western). [195-9307]

UDC 576.858.9:576.851.48

PRIMARY MAPPING OF Oag LOCUS DETERMINING SYNTHESIS OF SOMATIC O-ANTIGEN ON CHROMOSOME OF EL TOR *Vibrio* [*cholerae*]

Moscow GENETIKA in Russian Vol 28, No 10, Oct 82
(manuscript received 25 Aug 81) pp 1595-1601

SMIRNOVA, N. I., IL'INA, T. S. and SMIRNOV, G. B., All-Union Scientific Research Antiplague Institute "Mikrob," Saratov; Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, USSR Academy of Medical Sciences, Moscow

[Abstract] Mono- and semiauxotrophic mutants were obtained with the use of transposons determining tetracycline (Tn10) and chloramphenicol (Tn9) resistance to map the O-antigen locus on the chromosome of *Vibrio* [*cholerae*] biotype El Tor. The somatic O-antigen determines vibrio species and type specificity and exhibits endotoxin properties. Two classes of antigenic mutants were obtained among the 254 mutants from 37 groups of auxotrophs with a different phenotype: clones not agglutinating with cholera O, RO, Inaba or Ogawa sera (OagM), and clones agglutinating with cholera RO serum (OagR). The OagM and OagR clones lost the sensitivity to certain cholera bacteriophages and exhibited markedly higher hemolytic activity. OagM and OagR clones were found only in two groups of auxotrophs that were uracil or isoleucine and valine dependent; frequency of oag mutant appearance among ura$^-$-auxotrophs was higher (93%) than among ilv-auxotrophs (8.3%). This suggests that the oag gene is in the immediate vicinity of the ura gene. Ura-Oag auxotrophs produced mutants with arg and met mutations at a high rate and mutants with trp, leu, and ilv mutations at a lower rate; this suggests the presence of the linkage group oag hml ura arg met trp leu ilv. Primary Ilv Oag strains produced phe, leu and thr auxotrophs at a low rate, which suggests that these genes are linked. These findings indicate that the oag locus is linked to markers hml, ura, arg, met, leu, ilv, thre and phe. Transposons are recommended for use in genetic studies when genetic exchange is impossible or hampered for some reason. References 16: 8 Russian, 8 Western.
[195-9307]

UDC 575.24:576.858.9

MUTANTS OF EL TOR *Vibrio* [*cholerae*] WITH ALTERED HEMOLYSIN PRODUCTION: PRODUCTION AND CHARACTERIZATION

Moscow GENETIKA in Russian Vol 28, No 10, Oct 82
(manuscript received 23 Sep 81; after revision, 22 Feb 82) pp 1730-1732

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[Abstract] Transposons Tn9 (chloramphenicol resistance) and Tn10 (tetracycline resistance) were used to obtain mutants of the cholera vibrio with altered hemolysin production. Prototrophic strains, Vibrio [cholerae] el tor KM1 Hml$^+$/pNS10 (Rtsl:Tn10) and KM7 Hml$^+$/pNS9 (Rtsl:Tn10), with a hemolytic activity of 1.50 hemolytic units were used. All monoauxotrophic clones obtained had the same hemolytic activity as parent strains. Transposon Tn10 was used to obtain three types of mutants with altered hemolysin production: four clones without hemolytic activity (Hml-) derived from Pur$^-$-mutants, three clones producing two-five-fold less hemolysin (Hml$^\pm$), and clones with hemolysin hyperproduction. The change in hemolysin production was attributed to a chromosome mutation. Preliminary mapping of the hml locus was carried out. Comparison of phenotypes of semiauxotrophic mutants indicates that the hml locus of the three mutant types is located on a chromosome in the vicinity of genes pur, ura, arg and met. References 5: 3 Russian, 2 Western.
[195-9307]

UDC 575.1:576.851.48

PRODUCTION AND STUDY OF HYBRID PLASMIDS CARRYING THREONINE OPERON GENES IN *Escherichia coli*

Moscow GENETIKA in Russian Vol 28, No 10, Oct 82
(manuscript received 16 Feb 81; after revision 29 Oct 81) pp 1620-1629

KHURGES, Ye. M., GENING, L. V., KOZLOV, Yu. I., KOCHETOVA, L. P., LAPIDUS, A. L., MASHKO, S. V., MOSHENTSEVA, V. N., REBENTISH, B. A., YANKOVSKIY, N. K. and DEBABOV, V. G., All-Union Scientific Research Institute of Genetics and Selection of Industrial Microorganisms, Moscow

[Abstract] A fragment of the *Escherichia coli* chromosome carrying the entire threonine operon (thrA, thrB and thrC) or isolated genes of the operon was cloned at the HindIII site on the multicopy vector pBR322. A restriction map was constructed for this fragment. Cloning of threonine operon genes on the plasmid increased the activity of enzymes for threonine biosynthesis in

cells carrying hybrid plasmids. *E. coli* cells with hybrid plasmids with a complete threonine operon accumulated 4-6 g/liter of threonine in the culture medium within 72 hr. Threonine synthesis in cells was found to be determined primarily by the dose of gene thrA and also by the extent of its expression. Problems arising in the interpretation of findings on the transformation of corresponding auxotrophic bacterial strains by multicopy plasmids are discussed. For example, transformation of threonine auxotrophs by plasmids with a mutation in the threonine gene could produce auxotrophs in which the presence of many copies of the mutant enzyme molecules may compensate for low enzyme activity and thus seem to indicate the presence of an intact gene. Conversely, the presence of the gene on the plasmid, demonstrated by restriction and biochemical analysis, did not always ensure growth of auxotrophs transformed by the given plasmid on a minimal medium. Figures 5; references 19: 5 Russian, 14 Western.
[195-9307]

UDC 575.1

COMPARATIVE ANALYSIS OF P-1 INCOMPATIBILITY GROUP PLASMIDS

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[Abstract] This report is the first in a series of comparative studies on factors determining the unique properties of cosmopolitan plasmids, capable of being transferred via conjugation in many gram-negative bacteria. The DNA of plasmids with a broad host range (IncP-1 group), R906, R702 and R751, contained several BamHI, HindIII and EcoRI sites, in contrast to plasmid RP4 which has one site for each enzyme; hence the number of restriction sites in the genome does not determine plasmid cosmopolitan properties. Restrictases were used to obtain a series of deletion mutants of plasmid R906, which lost only a small DNA segment (1-14 kilobases). Four of the five deletion mutants, which were antibiotic sensitive, could be transferred by conjugation. Plasmid pAV1, which is the only IncP-1 group plasmid with a narrow host range, was found in an *Acinetobacter calcoaceticus* strain together with other plasmids with molecular masses of 1.3 to 13.5 Mdaltons. Some restriction fragments of R702, R751 and R906 DNA and R906 deletion mutants hybridized with ^{32}P-labeled DNA of plasmid RP4. The hybridization data in conjunction with properties common for IncP-1 plasmids suggest that plasmids with a broad host range have many genes, including vital genes, with the same or similar structural organization. Bacteria used as hosts were *Escherichia coli*, *Salmonella typhimurium*, *Pseudomonas putida*, *Rhizobium meliloti*, *Proteus mirabilis* and *A. calcoaceticus*. Figures 2; references 31: 2 Russian, 29 Western.
[195-9307]

UDC 575.1:576.856.9

PRODUCTION OF GENETIC RECOMBINANTS IN *Brevibacterium ammoniagenes* and *Brevibacterium divaricatum* BY PROTOPLAST FUSION

Moscow GENETIKA in russian Vol 28, No 10, Oct 82
(manuscript received 28 Jul 81) pp 1728-1729

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[Abstract] The study of protoplast fusion and genetic recombination in coryneform bacteria was continued in *Brevibacterium ammoniagenes* (ATCC 6872) and *B. divaricatum* (NRRL B-2312). The first species does not release glutamic acid into the culture fluid and is used in the selection of industrial nucleic acid-producing microorganisms; the second is a typical glutamate-synthesizing organism. Auxotrophic mutants were obtained with use of nitrosoguanidine; frequency of reversion to wild type was less than 10^{-8}. Protoplasts were obtained by treating mutant cells with penicillin (0.1 units/ml for *B. ammoniagenes* and 0.3 units/ml for *B. divaricatum*) and lysozyme (5 mg/ml). Protoplast fusion was induced by polyethylene glycol. Recombinants were selected on a hypertonic solid medium without growth factors. All possible phenotypes were obtained by crossing. The stability of resulting recombinants was determined for 30 generations; all resulting colonies retained the phenotype of the original recombinant clones, which indicates their genetic stability. The high frequency of recombinant formation and genetic stability indicates the great potential of this procedure for creating strains with specific properties and in the genetic analysis of such microorganisms. References 6: 1 Russian, 5 Western.
[195-9307]

LASER EFFECTS

UDC 617.7-007.681-021.3-085.849.19

LASER TREATMENT OF OPEN-ANGLE GLAUCOMA. RANDOMIZED COMPARATIVE STUDIES. CYCLOTRABECULOSPASIS AND TRABECULOPLASTY

Moscow VESTNIK OFTAL'MOLOGII in Russian No 5, Sep-Oct 82 (manuscript received 5 May 82) pp 18-22

[Article by M. M. Krasnov, academician, director of All-Union Scientific Research Institute of Eye Diseases, V. S. Akopyan, candidate of medical sciences, T. S. Il'ina, candidate of medical sciences, and Ye. L. Kazakova, All-Union Scientific Research Institute of Eye Diseases, USSR Ministry of Health, Moscow. Materials of this article were part of a report by M. M. Krasnov at the Fourth All-Russian Congress of Opthalmologists on Laser Therapy of Glaucoma (1982)]

[Text] Increasing attention is being given to laser methods of treating open-angle glaucoma. The original proposed techniques were aimed primarily at perforation of trabeculae and producing new drainage channels (M. M. Krasnov, 1972; Krasnov, 1973, 1974; Worthen and Wickham, 1973; Ticho and Zauberman, 1976). In recent years, a new direction has appeared and been successfully developed, the goal being improvement of drainage along physiological passages by a kind of "stretching" (spasis) of trabeculae. The first research in this area was done by M. M. Krasnov (USSR Patent No 690675, 1978; 1979), L. . Linnik et al. (1978), Wise and Witter (1979). Two fundamentally distinct versions of the technique are known: trabeculocoagulation (trabeculoplasty) according to Wise, and cyclotrabeculospasis (anterior cyclocoagulation) according to M. M. Krasnov. These techniques evidently have differing influence on intraocular pressure. According to experimental data of Gaasterland and Kupfer (1974), laser trabeculocoagulation may provoke a steady increase of intraocular pressure in healthy eyes of monkeys. Anterior cyclocoagulation may act not only on the permeability of trabeculae, but also on uveoscleral drainage passages. All these circumstances as well as the lack of reliable data on comparative evaluation of various methods of laser treatment of primary open-angle glaucoma have been the basis for our research.

This report gives the major procedural principles of comparative randomized tests based on the example of preliminary evaluation of the results of laser cyclotrabeculospasis and laser trabeculoplasty.

Materials and Methods. *Selection of patients. Criteria of suitability.* Patients aged 40 years and older with open-angle glaucoma, uncompensated intraocular pressure against a background of the maximum sustainable medicamentous regimen and with symptoms of progressive deterioration of visual functions are candidates for participation in the research.

Total number of patients shall be 150. Period of observation -- 5 years.

More detailed criteria of suitability are as follows:

1. Defects of the visual field progressively developing under the action of elevated intraocular pressure against a background of maximum sustainable medicamentous regimen.

2. Unobstructed coverage of the angle of the anterior chamber for gonioscopy.

3. Goldmann intraocular pressure of more than 21 mm Hg with medication.

4. Tonographic index C determined directly preceding routine medication of less than 0.16.

5. Opportunity of being under observation with required periodicity for at least 2 years.

6. Admissibility of pseudo-exfoliative and pigmental glaucomas with conformity of other symptoms.

7. Absence of symptomatology of secondary glaucoma.

8. Absence of congenital juvenile glaucoma.

9. No indication in anamnesis of an operation on the anterior chamber of the eye.

Clinical methods of research. Both in the preoperative period and in postoperative observation, the following methods are obligatory for examination:

1. Determination of maximum correctable visual acuity.

2. Investigation of field of view on glaucomatous defects by the Armaly technique (1969) in the Rock modification (1971).

3. Examination on a slit lamp (standard).

4. Applanation measurement of intraocular pressure by Goldmann tonometer.

5. Determination of diurnal fluctuations of intraocular pressure.

6. Imprint tonography.

7. Gonoscopy (with photography at the option of the observer).

8. Examination of the fundus: use of contact fundus-lens to determine vertical and horizontal excavation/disk diameter ratios.

Randomization and treatment are preceded by 3 visits, in addition to a possible 5-8 visits for determining diurnal variations of intraocular pressure. The post-operative period stipulates 7 obligatory main visits after 1, 3, 6, 12, 18, 24 months and 4 years. There may also be additional auxiliary examinations depending on the patient's condition and at the discretion of the observing physician.

TABLE 1

Scheme for dynamic observation of patients
and distribution of methods of examination by periods

	Before treatment				After treatment						
Study	1	2	3	4–11	6 wk	3 mo	6 mo	12 mo	18 mo	2 yr	5 yr
Determination of visual acuity	+	+	+	−	+	+	+	+	+	+	+
Perimetry	+	−	+	−	+	+	+	+	+	+	+
Biomicroscopy	+	+	+	−	+	+	+	+	+	+	+
Tonometry	+	+	+	+	+	+	+	+	+	+	+
Tonography	−	+	−	−	+	+	−	−	−	+	+
Gonioscopy	+	−	−	−	+	+	−	+	−	+	+
Ophthalmoscopy	−	−	+	−	+	−	−	+	−	+	+

The scheme for dynamic observation and distribution of methods of examination by periods is summarized in Table 1.

Randomization. Randomization means that the choice of treatment for each individual case (patient, eye, and so on) is to be made by an independent series of randomization, e. g., equiprobability criteria or use of a table of random numbers. Randomization is used to preclude the slightest bias, and until now has been the only method of dividing clinical material into groups with maximum identity of characteristics.

Patients meeting the criteria of suitability, regardless of the will of the researcher, are separated by randomization into two equivalent groups: for laser cyclotrabeculospasis and for laser trabeculoplasty.

In cases of a bilateral process, when the time comes for treating the second eye later than for treating the first, the same technique is used on both.

Methods of treatment. Laser procedures of both kinds are done on ambulatory patients. Local instillation anesthesia (Sol Dicaini 0.5-1.0%) blocks pain and calms the patient.

An argon laser photocoagulator M-800 or M-900 made by the "Coherent Radiation" Company is used. *Laser trabeculoplasty according to Wise.* Characteristics of laser emission: diameter of focal spot 50 μm, exposure 0.1 s, power 1000-1300 mW. At least 100 applications are distributed uniformly over the trabecular bundle. Three different versions of localizing focusing are used:

1. On the interface between the anterior and middle third of the proposterior process of the trabeculae.

2. On the border between the middle and posterior third of the trabeculae.

3. Alternation of succeeding applications in versions 1 and 2 in checkerboard fashion.

Laser cyclotrabeculospasis according to M. M. Krasnov. Characteristics of laser emission: diameter of focal spot 50 µm, exposure 0.1 s, power 500-1000 mW. Coagulates applied around the entire periphery of the angle of the anterior chamber, usually in 2-3 applications. A standard gonioscope is used.

The applications are located on the anterior part of the ciliary body in two parallel rows that touch, with 20-30 in each row (a total of 80-100).

Post-operative medication schedule. Antiphlogistic therapy and cycloplegic preparations are used depending on the state of the eye: the antiglaucoma regimen remains unchanged for at least 1 month of observation.

To check the state of the eyes in the early post-operative period, initial examinations were done within 1-2 days and 1 week after the procedure.

Medication therapy is corrected no earlier than 1 month after treatment. Additional therapy is started at intraocular pressure of more than 22 mm Hg, and medication is maintained unchanged at intraocular pressure of less than 21 mm Hg.

Principles of analyzing results. Treatment is considered successful when the intraocular pressure is kept to less than 22 mm Hg against a background of medication and without it.

Treatment is considered *conditionally successful* when visual functions during the period of observation remain stabilized although the intraocular pressure is higher than 21 mm Hg.

Treatment is considered *unsuccessful* when the intraocular pressure remains higher than 21 mm Hg and progressive impairment of the visual field is observed.

In all cases of progressive deterioration of the field of vision regardless of intraocular pressure, the patient is removed from the study for purposes of surgical treatment.

Research Results. We observed 92 patients (94 eyes) aged 34-66 years. The initial characteristics of the groups of patients are summarized in Table 2.

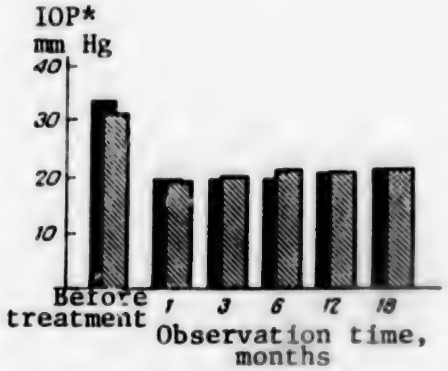
Not a single case of unsuccessful treatment was seen on any stage of observation. In most cases, successful treatment was established, and in the remaining cases treatment was conditionally successful (Table 3). This shows that all patients on the given stage of comparative tests have stabilized or improved visual functions as a result of laser treatment (Table 4). Analysis

TABLE 2

Principal initial characteristics of groups of patients

Index	Wise	Krasnov
Number of patients	46	48
Sex		
male	27	22
female	19	26
Age, years		
40	0	2
41--60	13	18
60	33	28
Average age, years	64,09±9,32	55,38±8,11
Average IOP*	34,42±4,18	31,5±4,91
Average C	0,10±0,02	0,09±0,04

*IOP = intraocular pressure



Comparative characteristics of different methods with respect to degree of hypotensive effect at different times of observation. Shaded columns according to Krasnov's method, black columns according to Wise's method

TABLE 3

Analysis of results of treatment by periods of post-operative observation

Index	Times of observation, months									
	1		3		6		12		18	
	Method									
	Wise	Krasnov	Wise	Krasnov	Wise	Krasnov	Wise	Krasnov	Wise	Krasnov
Total number	46	48	36	36	21	22	20	20	8	9
Successful treatment	31	28	21	23	12	12	12	11	5	6
Conditionally succ.	15	20	15	13	9	10	8	9	3	3
Unsuccessful	0	0	0	0	0	0	0	0	0	0

TABLE 4

Change of visual field in post-operative period

Index	Method	
	Wise	Krasnov
Total number	46	48
Improved	31	27
Unchanged	15	21
Worse	0	0

TABLE 5

Average values of intraocular pressure and ease of drainage in post-operative period

Observation time months	Method					
	Wise			Krasnov		
	eyes	IOP*	c	eyes	IOP*	c
18	8	21,73±2,33	0,16±0,04	9	21,8±3,14	0,18±0,05
12	20 (8)	21,27±1,17	0,16±0,01	20 (9)	21,6±3,5	0,19±0,02
6	21 (20)	20,10±2,24	0,16±2,24	22 (20)	21,5±4,25	0,17±0,04
3	36 (21)	20,00±2,24	0,18±0,05	36 (22)	20,6±2,07	0,16±0,05
1	46 (36)	20,00±2,85	0,15±0,04	48 (36)	19,7±3,26	0,18±0,05

*IOP = intraocular pressure
Note: The number of eyes with later time of observation is shown in parentheses

TABLE 6

Changes of medication in post-operative period

Index	Method	
	Wise	Krasnov
Number of patients	46	48
Miotics stopped	6	20
Regimen relaxed	23	14
Regimen unchanged	17	14
Regimen intensified	0	0

of the results of the "post-operative period" shows stable normalization of hydrodynamic indices at all observation times (Table 5). The diagram on the preceding page shows a graph of the degree of reduction in the intraocular pressure with respect to the initial value at different times of observation for the techniques being compared.

As a result of laser treatment, most patients could be taken off their medication or be put on a more relaxed schedule; in no case was intensification of medication required (Table 6).

The procedural principles outlined in this article for selecting patients, clinical evaluation and dynamic observation can be used in setting up similar studies of other laser techniques for treating open-angle glaucoma. In particular, we have used the same principle in a parallel study of the effectiveness of modulated laser goniopuncture. The results of this research will be a topic of a separate paper, but with much more extended times of observation.

In conclusion, it should be stressed once more that this report gives only early results. Final conclusions on the particulars and efficacy of the investigated methods of laser treatment of glaucoma cannot be made until after a period of at least 5 years of observations of the entire group of patients.

REFERENCES

1. Krasnov, M. M., VESTNIK OFTAL'MOLOGII, No 3, 1972, pp 27-34.

2. Krasnov, M. M., USSR Patent No 690675, 1978.

3. Krasnov, M. M., "Mikrokhirurgiya glaukom" [Glaucoma Microsurgery], Moscow, 1980.

4. Linnik, L. A., in: "S"yezd oftal'mologov Ukrainy. Shestoy. Tezisy dokladov" [Abstracts of Reports to Sixth Congress of Ukrainian Ophthalmologists], Odessa, 1978, pp 96-97.

5. Gassterland, D., Kupfer, C., INVEST. OPHTHAL., Vol 13, 1974, pp 455-457.

4. Hager, H., KLIN. MBL. AUGENHEILK., Vol 162, 1973, pp 437-450.

5. Krasnov, M. M., "Microsurgery of the Glaucomas", St. Louis, 1979.

6. Ticho, U., Zauberman, H., ARCH. OPHTHAL., Vol 94, 1976, pp 61-64.

7. Wise, J. B., Witter, S. L., Ibid., Vol 97, 1979, pp 319-322.

8. Wise, J. B., OPHTHALMOLOGY, Vol 88, 1981, pp 197-202.

9. Worthen, D. M., Wickham, M. G., INVEST. OPHTHAL., Vol 12, 1973, pp 707-711.

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CSO: 1840/159

UDC 617.713-085.849.19

EXPERIMENTAL STUDY OF POSSIBILITY OF USING CO_2 LASER TO ALTER CORNEAL REFRACTION (PRELIMINARY REPORT)

Moscow VESTNIK OFTAL'MOLOGII in Russian No 5, Sep-Oct 82 (manuscript received 25 May 82) pp 32-36

[Article by S. E. Avetisov, V. S. Akopyan, A. V. Bol'shunov, A. P. Chetverukhin, candidates of medical sciences, and M. M. Krasnov, academician, USSR Academy of Medical Sciences, professor, director of All-Union Scientific Research Institute of Eye Diseases, USSR Ministry of Health, Moscow]

[Text] Introduction. Purpose of the Work. In recent years reports have appeared in the non-Soviet literature on attempts to alter the refraction of the eye by using CO_2 laser radiation in experiments. Its pronounced coagulation effect is due to the high (up to 80-90%) absorptivity of optical fluids of the eye on the wavelength of CO_2 laser emission (10.6 μm). Also intriguing is the possibility of non-contact metered coagulation of tissues, and the ambulatory nature of the procedure. However, the results of these studies are rather contradictory. Also, there is no unanimous opinion on the technique for treating the cornea and on the stability of the resultant changes in clinical refraction.

The purpose of our research was to study the basic capabilities for using CO_2 laser radiation to change the curvature of the cornea. The research was exploratory in nature. We attempted to find the optimum version of laser treatment topography, taking consideration of the research done by Gallagher (1975), Fuller et al. (1979), Beckman (1980), Levy et al. (1980), Peyman and Larson (1980) without repeating their work.

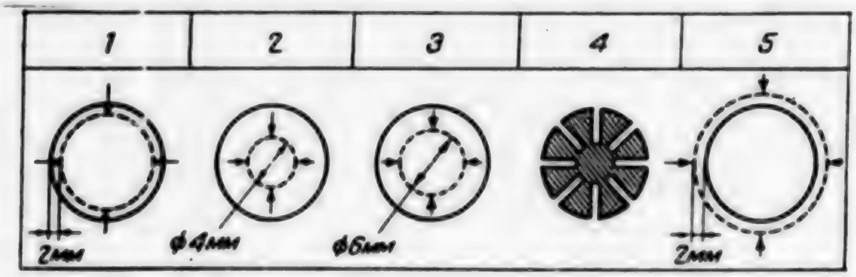
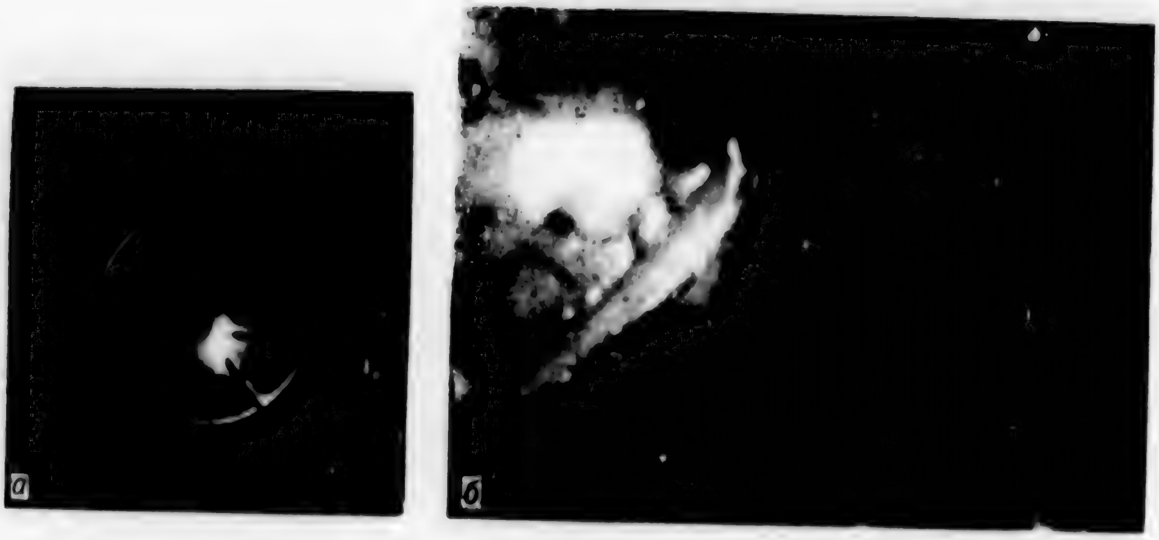


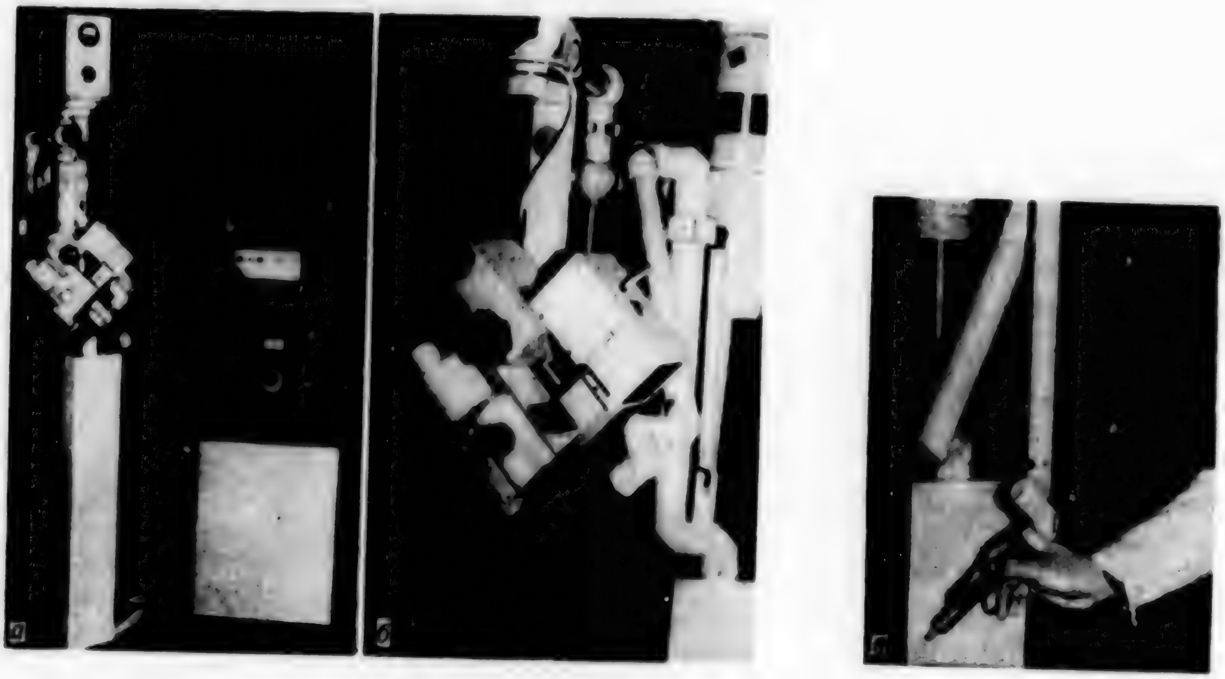
Fig. 1. Different versions of laser treatment topotraphy

Material and Methods. Five versions of laser intervention were examined in the course of the work (Fig. 1). Four of these involved focused laser action on the cornea, and one -- on the sclera. In using techniques 1, 2 and 3, coagulation of the cornea was done at distances



a b

Fig. 2. Shielding mask (a) and radial defect of cornea after laser exposure through slot of shielding mask (b)



a b c

Fig. 3. System 450 CO_2 surgical laser made by Coherent Radiation Company (United States): overall view (a), laser-microscope adaptation system (b) and laser scalpel (c)

of 2 mm from the limb, and also 2 and 3-4 mm from the center of the cornea respectively. Laser shots in the form of isolated pulses with exposure of 0.2 s were applied at 4 points of the cornea at meridians of 12, 15, 18 and 21 hours. Technique 4 involved coagulating the cornea through a specially made brass shielding mask 13 mm in diameter with 8 radial slots 4.5 mm long and 0.5 mm wide (Fig. 2a, b). The laser beam was focused in the plane of four mutually perpendicular slots. Coagulation was done in the mode of constant irradiation. The duration of exposure did not exceed 1 s. Immediately before exposure after preliminary local instillation anesthesia (Sol Dicaini 0.25%) the mask was fitted loosely over the cornea. Coagulation of the sclera (technique 5) was done in isolated pulses with exposure of 0.5 s. The laser shots were applied on the sclera at a distance of 2 mm from the limb in 4 points with meridians of 12, 15, 18 and 21 hours. Radiation power in all methods was 5-10 W. Two possible systems for adaptation of the given laser system were used to focus radiation: a laser-microscope (techniques 1, 4 and 5) and a laser scalpel (techniques 2 and 3).

We used the System 450 CO_2 surgical laser made by Coherent Radiation Company (United States) (see Fig. 3a) with maximum emission output power of up to 50 W, exposure pulses of 0.1, 0.2, 0.5 and 1.0 s and continuous mode of irradiation, diameter of the light spot in the focal plane with the laser-microscope adaptation system (Fig. 3b) of 2500 μm, and in the laser scalpel system (Fig. 3c) of 500 μm. It should be stressed that the facility was designed for gynecology and LOR surgery, and we were unable to find any information on its use in ophthalmology.

The experiments were done on 44 eyes of 22 chinchilla gray rabbits with mass of 1.5-2.0 kg. Ophthalmometry was done on all animals immediately before and after the procedure, and also during dynamic observation (with ophthalmometer made by Karl Zeiss Jena, East Germany), as well as biomicroscopy of the anterior and posterior chambers of the eye, and refractometry was done on 18 rabbits (36 eyes) with a Hartinger refractometer (Karl Zeiss Jena). These studies were done on the 2-d, 7-th, 14-th, 30-th, 60-th, 90-th and 100-th days after the procedure.

Laser interventions on the cornea were done under general anesthesia (0.1% solution of hexane intravenously), and on the sclera -- under local instillation anesthesia (0.25% tetracaine solution).

Results and Discussion. The research results are summarized in the table.

Results of laser interventions (five versions)

Method	Number of eyes	Corneal refraction, dptr (data of ophthalmometry)				
		before procedure	days after procedure		reduction	
			57—60	93—108	M	P
1	10	44,58±0,3517	43,80±0,4058	43,78±0,3247	0,80	>0,05
2	10	44,25±0,5140	43,53±0,5411	44,20±0,5411	0,05	>0,05
3	10	44,48±0,5140	43,83±0,5952	44,25±0,7034	0,23	>0,05
4	4	43,75±0,4424	43,25±1,3274	42,5±1,7699	1,25	>0.05
5	10	45,05±0,4058	43,35±0,1623	43,13±0,2164	1,93	<0,01

A tendency toward reduction of refractive power of the cornea is observed with use of all methods of laser intervention.

The most pronounced statistically certain changes (1.93 diopters, $t = 4.19$, $p < 0.01$) were noted in cases of coagulation of the sclera (technique 5). In the sections of application of laser shots, we noted the occurrence of delicate whitish rounded foci of coagulation of the conjunctiva and sclera up to 2 mm in diameter. Within 15-20 minutes after the procedure, the occurrence of a local injection of the conjunctiva was observed. These changes disappeared spontaneously within 5-7 days after the procedure.

When technique 4 was used, the corneal refraction was reduced by 1.25 diopters on average. However, this reduction was not statistically certain ($p > 0.05$), apparently because the technique was used on only 4 eyes due to excessive traumatism. Gross changes in the cornea were observed in the form of radial deep (up to $^2/_3$ of the thickness of the stroma) defects with pronounced coagulation necrosis of the edges, and extensive (through the entire thickness) infiltration of the stroma (see Fig. 2b). These changes were accompanied by pronounced mixed injection of the eyeball with predominant pericorneal injection, and an abundant discharge of serous matter on the second day after the procedure. On the 10-14-th day, radial cataract-like clouding was observed in the area of the damage.

With use of methods 2 and 3, changes in refraction of the cornea were minimal (0.05 and 0.23 diopters respectively); however, the results were not uniform. On the whole, a tendency was noted toward reduction of corneal refraction. In some cases, a slight increase in refraction was observed (within a range of 1.0 diopters). In 60% of the cases, the changes in refraction were accompanied by onset of irregular corneal astigmatism.

The average amount of reduction in refraction with the use of method 1 was larger (0.80 diopter) than in methods 2 and 3. However, this reduction was statistically uncertain ($t = 1.67$, $p > 0.05$).

In all cases immediately after laser exposure of the cornea (methods 1, 2 and 3) rounded white foci 500 and 2000 μm in diameter appeared, covering the epithelium and the upper third of the stroma. Slight wrinkles of the cornea were noted between the coagulates (Fig. 4). Within 15-20 minutes after the procedure, mixed injection of the eyeball was observed that persisted for 5-7 days. On the 10-14-th day, thin cloud-like turbidity formed on the cornea in the area of the coagulates. In treatment by techniques 2 and 3, perforation of the cornea occurred in isolated cases.

Regardless of the method used, in no case were there any changes whatever in the lens or the tissues of the fundus.

In conclusion it should be emphasized that the greatest refraction effect (1.93 diopters) was produced by laser coagulation of the conjunctiva and sclera. In this connection, it cannot be ruled out that the changes in clinical refraction of the eye arose as a result of intensification or relaxing of the tonus of the ciliary muscle due to local coagulation near the ciliary body.

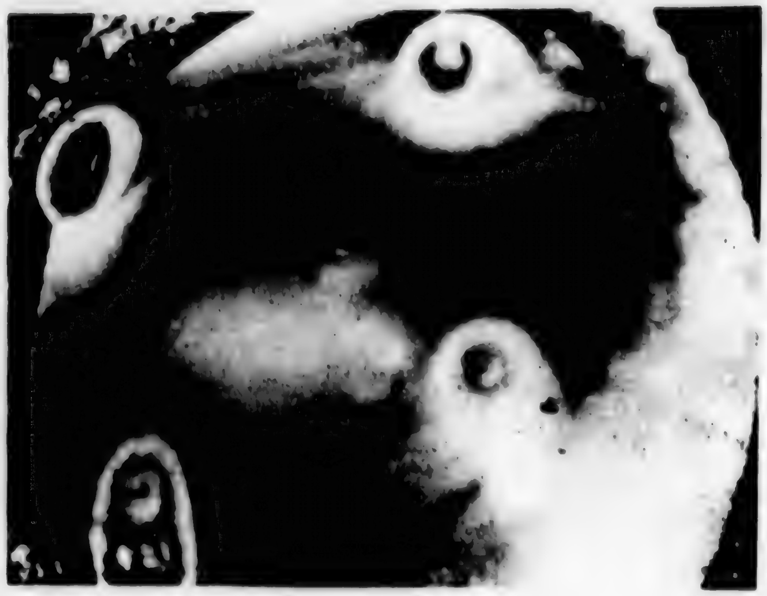


Fig. 4. Corneal defects immediately after laser exposure; between the defects are wrinkles of the cornea

However, a clear correlation between refractometric and ophthalmometric data in dynamic observation suggested that the resultant changes in clinical refraction were due to thickening of the cornea. To enhance the refraction effect, a subsequent attempt was made to increase the "pliability" of the cornea by making four mutually perpendicular non-perforating incisions in the cornea with subsequent laser coagulation by technique 5 (see Fig. 5). The results show enhancement of the refraction effect by an average of 1.0 diopter.

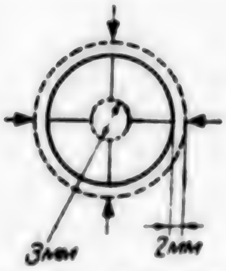


Fig. 5. Diagram of incisions and laser shots (explanation in the text)

Thus our research has demonstrated that refraction of the eye can be altered by laser irradiation acting both on the cornea and on the sclera. In this study, the latter method was the more promising. In our opinion, its principal advantage is that intervention is done on opaque tissues of the eye. This completely obviates the possibility of impairment of visual functions that are associated with a change in the cornea.

REFERENCES

1. Beckman, H., in: "Keratorefraction", Denison, 1980, pp 77-80.
2. Fuller, T. et al. in: "International Medical Laser Symposium", Detroit, 1979, p 21a.
4. Gallagher, Y. T., "USAF sch. aerospace med.", Vol 75, 1975, p 13.
5. Levy, K. S. et al. in: "Keratorefraction", Denison, 1980, pp 81-92.
6. Peyman, C. A., Larson, B., OPHTHAL. SURG., Vol 11, 1980, pp 325-329.

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UDC 617.736-001.5+617.736-007.251]-085.849.19

TWO-STAGE ARGON LASER PHOTOCOAGULATION OF MACULAR RUPTURES

Moscow VESTNIK OFTAL'MOLOGII in Russian No 5, Sep-Oct 82 (manuscript received 2 Feb 82) pp 59-61

[Article by A. A. Bochkareva, professor, chairman of Department of Eye Diseases, and Yu. A. Ivanishko, Rostov Medical Institute]

[Text] There is no doubt about the necessity of using photocoagulation to treat macular ruptures (L. A. Linnik, 1966; Ye. S. Libman, 1969; G. G. Ziangirova Ye. N. Malyshenko, 1970; N. V. Makarskaya and V. G. Sidorenko, 1976; S. F. Shershevskaya et al., 1978; S. F. Shershevskaya and M. I. Uzdin, 1980; Hanselmayer, 1976; Vick, 1978; James, 1980, etc.). Isolated reports have been published concerning the effective use of argon lasers in this pathology (E. G. Yeliseyeva et al., 1979; L'Esperance, 1975; Tobari, 1976; Haut et al.).

The main goal pursued in treatment of macular ruptures logically includes two jobs: 1. effective blocking of the rupture to prevent extended retinal detachment that develops in patients with macular ruptures with frequency from 6 to 23% (I. N. Ganichenko, 1978; Yu. Adukauskayte and R. Gel'zhinis, 1980), and in the case of traumatic macular rupture, in 67% of the patients (V. S. Grishina, 1978); 2. maximum salvaging of the functionally intact retina at the edge of the rupture, where a new point of fixation is partly situated (A. I. Gorban', 1974; Vick, 1978). Of the known techniques, it is our opinion that these jobs can be most preferably handled with the best results by a combination of the "removed horseshoe method" (L. A. Linnik, 1966) with momentary application of 3-4 additional coagulates at the edge of the macular rupture (I. N. Ganichenko and L. A. Linik, 1978; I. N. Ganichenko, 1978). However, in many cases the zone of edema or local flat detachment of the retina near the macular defect and the associated distant removal of the edges of the macular rupture away from the underlying membranes makes it problematic whether strong chorioretinal junctions will form at the points of coagulation. To achieve the effect, it is necessary to increase the intensity of radiation, which is also undesirable during manipulations in the macular and paramacular zones of the retina.

Our research was aimed at developing a method of photocoagulation combining minimum traumatism with effective blocking of the rupture.

We used a model 500-T xenon coagulator made by Karl Zeiss (East Germany) and a model 900 "Kogerent" argon laser. Observations were done on 38 patients (43 eyes) with true macular ruptures of diverse etiology. Their dimensions did not exceed 1.2 mm. All patients had peripheral edema or flat retinal detachment extending 0.5-2 mm from the edge of the rupture. Visual acuity did not exceed 0.1. Visometry and campimetry were done on all patients, and fluorescent angiography was done on most of them. To confirm the open nature of ruptures and study the topography of the point of vision fixation, methods were used that were recommended by A. I. Gorban' (1973, 1974). Bed rest and conservative therapy were ineffective. Photocoagulation was done on all patients.

Circular blocking around the edge of the rupture by the method of M. I. Uzdin (1976) was done on patients of the first group (8 eyes). An argon laser was used for the procedure on 4 of the patients, and a xenon photocoagulator was used on the other 4. After laser coagulation (diameter of coagulate 50 µm, exposure 0.1 s, power 250-500 mW) 2 patients showed an improvement of visual acuity from 0.05 and 0.08 to 0.1 and a reduction in scotomata; functions were unchanged in the other 2. After xenon coagulation (1-2°C, regime 3-4°C), visual acuity remained within a range of 0.08 for all 4 patients. One patient showed an increase in scotoma, nearly merging with physiological and forming a central defect in the field of vision, which we attributed to damage of the papillomacular bundle. No progression of separation was observed. Period of observation 1-3 years.

Argon laser coagulation was done in two stages on patients of the second group (28 patients, 33 eyes). The first stage was barrage of the paramacular region near the zone of edema or flat detachment in the form of a horseshoe opened toward the disk of the optic nerve (100 µm. 0.05-0.1 s, 200-400 mW, interval 200-400 µm). The patients were put on half-bed rest and acetazolamide in tablets of 0.25 g twice a day. On the 1-3rd day after coagulation, a moderate increase in retinal edema was observed, which was then replaced with an ophthalmoscopically noticeable reduction, resorption of subretinal fluid, adjoining of the retina to the vascular membrane on the edge of the rupture. An appreciable reduction in area of central scotomata (by a factor of 2-5) was campimetrically noted. The second stage of intervention was done on the 3-10th (6th on average) day, depending on the time of adjoining of the retina to the macular region. This stage consisted in applying fine coagulates of low intensity (50 µm, 0.05-0.1 s, 100-150 mW) 3-5 in number directly on the edge of the macular rupture with consideration of the fixation point. Before treatment, visual acuity for patients of the second group was 0.067 ± 0.005; as a result of such salvaging intervention, visual acuity was considerably improved (see table), averaging 0.26 ± 0.02; $p < 0.01$. Visual acuity was 0.2 or better for 75% of the patients. There were no relapses of edema or detachment. Time of observation from 3 months to 3 years. The second stage of intervention could not be done on 2 of the patients (2 eyes) in view of the fact that detachment along the edge of the defect showed no tendency to adjoin, and it was necessary to limit ourselves only to additional laser barrages 1-1.5 mm from the edge of the macular rupture.

Based on the foregoing, we consider close circular coagulation around the edge of the macular rupture inadvisable. Manipulations in the macular region using

Visual acuity before and after treatment for patients of second group
(two-stage method of laser coagulation)

Visual acuity before treatment	Number of eyes	Visual acuity after treatment						
		0,02—0,04	0,05—0,07	0,08—0,1	0,12—0,16	0,2—0,3	0,32—0,4	0,5
0,02—0,04	6	—	1	4	—	1	—	—
0,05—0,07	12	—	—	1	1	8	2	—
0,08—0,1	15	—	—	—	1	9	2	3
Total...								
abs.	33	—	1	5	2	18	4	3
%	100	—	3	15	6	54	12	9

xenon coagulation are undesirable due to the difficulty of producing coagulates smaller than 300 μm in diameter. We attribute the efficacy of the above-described two-stage technique to the following: the paramacular laser barrage causes a vascular reaction that shows up in the first few days as a slight reactive edema, and then is replaced by rapid resorption of the subretinal fluid and adjoining of the retina, which is a consequence of improvement of exchange and drainage in the coagulation zone. In later stages, this function is taken on by the fibrovascular tissue formed along the path of the coagulation scar, and by chorioretinal vascular shunts, the possibility of formation of which has been indicated by M. M. Krasnov et al. (1976). Such a change in the barrier between the retinal and choroid vascular systems may, in our opinion, not only prevent relapses of retinal edema, but also resuscitate exchange in the macular zone of the retina, compensating the hypoxic factor of pathogenesis of mycrocystic degeneration of the retina along the edge of the rupture.

Thus laser intervention on the first stage leads to tighter adjoining of the retina to the vascular membrane in the zone of the rupture, enabling effective blocking on the second stage by application of 3-5 low-intensity coagulates along the edge, preserving the macular zone of the retina from excess damage. High visual results and absence of relapses of detachment lead us to conclude that the above-described two-stage technique is optimum, and we recommend it for clinical practice.

REFERENCES

1. Adukauskayte, Yu., Gel'zhinis, R., in: "Respublikanskaya konferentsiya oftal'mologov Litovskoy SSR. Sed'maya. Tezisv" [Abstracts of Seventh Lithuanian SSR Republic Conference of Ophthalmologists], 1980, pp 12-14.

2. Ganichenko, I. N., Linnik, L. A., OFTAL'MOLOGICHESKIY ZHURNAL, No 5, 1978, p 235.

3. Ganichenko, I. N., "Svetovaya koagulyatsiya kak samostoyatel'nyy metod lecheniya otsloyki setchatoy obolochki i razryvov yeye bez otsloyki. (Primeneniye ksenovogo fotokoagulyatora, rubinovogo i neodimovogo lazerov v klinike)" [Photocoagulation as Independent Method of Treating Detached Retina and Ruptures of the Retina Without Detachment. (Use of Xenon

Photocoagulator, Ruby and Neodymium Lasers in Clinical Practice)], candidate's dissertation, Odessa, 1978.

4. Gorban', A. I. in: "S"yezd oftal'mologov SSSR. Chetvertyy. Materialy" [Materials of Fourth Congress of Soviet Ophthalmologists], Moscow, 1973, Vol 1, pp 331-334.

5. Gorban', A. I., VESTNIK OFTAL'MOLOGII, No 4, 1974, pp 38-41.

6. Grishina, V. S., in: "Travmy glaz" [Eye Traumas], Moscow, 1978, pp 96-99.

7. Yeliseyeva, E. G., Pereverzina, O. K., Simonova, K. K. in: "Rekonstruktivnaya oftal'mokhirurgiya" [Reconstructive Ophthalmosurgery], Moscow, 1979, pp 147-150.

8. Ziangirova, G. G., Malyshenko, Ye. N., in: "Vserossiyskoye nauchnoye meditsinskoye obshchestvo oftal'mologov. Konferentsiya. Materialy" [Materials of Conference of All-Russian Scientific Medical Society of Ophthalmologists], Ordzhonikidze, 1970, pp 54-56.

9. Krasnov, M. M., Dimitrova, V. S., Pereverzina, O. K. et al., VESTNIK OFTAL'MOLOGII, No 3, 1976, pp 27-31.

10. Krasnov, M. M., Pereverzina, O. K., Yeliseyeva, E. G. et al., Ibid., No 5, pp 56-60.

11. Libman, Ye. S., OFTAL'MOLOGICHESKIY ZHURNAL, No 3, 1969, p 186.

12. Linnik, L. A., in: "Nauchno-prakticheskaya konferentsiya oftal'mologov Gruzii. Vtoraya. Materialy" [Materials of Scientific-Practical Conference of Georgian Ophthalmologists], Tbilisi, 1966, pp 268-269.

13. Makarskaya, N. V., Sidorenko, V. G., in: "Sredstva i metody kvantovoy elektroniki v meditsine" [Methods and Means of Quantum Electronics in Medicine], Saratov, 1976, p 72.

14. Uzdin, M. I., VESTNIK OFTAL'MOLOGII, No 6, 1976, pp 40-42.

15. Shershevskaya, S. F., Faustova, A. M., Kungurova, S. M., OFTAL'MOLOGICHESKIY ZHURNAL, No 3, 1978, p 174-178.

16. Shershevskaya, S. F., Uzdin, M. I., in: "Voprosy klinicheskoy oftal'mologii" [Problems of Clinical Ophthalmology], Novokuznetsk, 1980, pp 30-31.

17. Hanselmayer, H., KLIN. MBL. AUGENHEILK., Vol 169, 1976, pp 231-234.

18. Haut, J., Limon, S., Massin, M. et al., "Le laser en ophtalmologie", Paris, 1981, pp 279-284.

19. James, M., ALBRECHT. GRAEFES ARCH. KLIN. EXP. OPHTHAL., Vol 215, 1980, pp 59-63.

20. L'esperance, Er. A., "Ocular Photocoagulation", St. Louis, 1975, pp 230-231.

21. Tobari, J., FOLIA OPHTHALMOL. JAP., Vol 27, 1976, pp 1099-1105.

22. Vick, H. P., FOLIA OPHTHALMOL., Vol 3, 1978, pp 3-7.

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MICROBIOLOGY

UDC 582.288

SPECIES IDENTIFICATION OF ZEARALENONE-PRODUCING FUSARIUM FUNGI ISOLATED FROM WHEAT, CORN, AND KIDNEY BEANS

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 44, No 6, Nov-Dec 82 (manuscript received 22 Oct 81) pp 33-37

DIMITROV, M., DONCHEVA, I. and NIKOLCHEVA, M., Scientific Institute of Hygiene and Occupational Diseases, Sofia, Bulgaria

[Abstract] Studies were conducted on 163 Fusarium isolates from wheat, corn, and kidney beans to determine their species section and production of the mycotoxin zearalenone (F_2). The results showed that 109 isolates (66.9%) produced more than 70 mcg/g of zearalenone; furthermore, the range for the wheat isolates was 0.07-45 mcg/g, for the corn isolates 0.13-70.7 mcg/g, and for the kidney bean isolates 0.16-60.1 mcg/g. More than 75% of the producers isolated from the wheat and kidney beans and over 50% of the corn isolates belonged to the Discolor section and consisted largely of F. graminearum and F. gibbosum. Since the Fusarium fungi are widely distributed it appears that zearalenone may constitute a health hazard for humans. References 14: 2 Bulgarian, 2 Russian, 10 Western. [163-12172]

UDC 576.851.132.097

ANTIGENICITY OF ENTOMOPATHOGENIC STRAINS OF PSEUDOMONAS FLUORESCENS

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 44, No 6, Nov-Dec 82 (manuscript received 22 Jun 81) pp 53-58

MIKHNOVSKAYA, N. D., STAVCHUK, M. D., UKRAINSKAYA, Ye. A., POVAZHNAYA, T. N. and RUBAN, Ye. M., Kiev State University

[Abstract] Agglutination studies were conducted on the relationship between several species of Pseudomonas (Ps. putida, Ps. aeruginosa), including entomopathogenic and apathogenic Ps. fluorescens. The results

showed that rabbit antisera against Ps. fluroescens pathogenic for mosquitoe larvae cross-reacted with all the other pathogenic strains in titers of 1:1200 to 1:9600, whereas the titers in reactions with nonpathenic strains were on the order of 1:100 to 1:400. These observations indicate that serologic tests can be employed for preliminary identification of entomopathogenic Ps. fluorescens strains. References 11: 3 Ukrainian, 1 Hungarian, 7 Russian.
[163-12172]

UDC 616.981.711-078

PASSIVE HEMAGGLUTINATION IN THE DETECTION OF RICKETTSIA PROWAZEKII

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 44, No 6, Nov-Dec 82 (manuscript received 27 Apr 81) pp 58-62

LUTS', A. G. and KITSARA, M. S., Lvov Scientific Research Institute of Epidemiology and Microbiology

[Abstract] Comparative studies were conducted on the effectiveness of passive hemagglutination and other serologic tests in detecting Rickettsia prowazekii in lice homogenates and in blood of experimentally infected guinea pigs vis-a-vis detection by recovery of the agent from infected body lice. Although passive hemagglutination was found to be highly specific in experimental epidemic typhus, it was not as sensitive as the classical approach which relies on recovery of the causative agent from infected lice. However, because of the simplicity of passive hemagglutination further research should be conducted on this technique to develop a convenient and reliable tool for the early diagnosis of epidemic typhus. References 13 (Russian).
[163-12172]

UDC 616.98:579.881]-07:616.15-097.34-078.731

IMMUNOFLUORESCENT MICROAGGLUTINATION. PART 4. DETECTION OF ANTIBODIES AGAINST R. SIBIRICA

Moscow LABORATORNOYE DELO in Russian No 12, Dec 82 (manuscript received 29 Jul 81) pp 42-43

MIRSKIY, V. Ya. and BARBAN, P. S., Perm Scientific Research Institute of Vaccines and Sera

[Abstract] Fluorescent microagglutination was used to examine various human and cattle sera for the presence of antibodies against R. sibirica, as well as commercial equine sera, using fluorescent R. sibirica reagent. Comparison of the microagglutination tests with complement fixation

studies conducted in parallel on the same sera showed the former technique to be 1.4- (equine sera) to 2- to 8-fold as sensitive as complement fixation. The fluorescent microagglutination method can be recommended for clinical application and in survey studies. References 5 (Russian).
[168-12172]

UDC 579.843.95:579.222:547.915.5'458

RAPID DETECTION OF LIPOPOLYSACCHARIDE STRUCTURAL FEATURES ON THE BASIS OF PRESENCE OR ABSENCE OF ALDOHEPTOSE IN PLAGUE AND PSEUDOTUBERCULOSIS BACILLI

Moscow LABORATORNOYE DELO in Russian No 12, Dec 82
(manuscript received 11 Feb 82) pp 46-47

TARANENKO, T. M., GOL'DFARB, L. M., NAUMOV, A. V. and ANDREYEVA, I. P.,
All-Union Scientific Research Anti-Plague Institute "Mikrob", Saratov

[Abstract] A rapid spectrophotometric method is described for the detection of aldoheptose in the trichloroacetic acid extract of P. pestis and P. pseudotuberculosis. The method eliminates the stages of isolation and purification and can provide results in 4-5 days. Evaluation of 53 P. pestis and 58 P. pseudotuberculosis cultures showed that P. pestis R and S forms lacked aldoheptose. Aldoheptose was present in normal levels in P. pseudotuberculosis S forms, diminished in OS forms, and was virtually undetectable in R forms. In atypical P. pseudotuberculosis R and S forms aldoheptose levels were also depressed. These observations indicate that the technique can be used to distinguish between microorganisms producing or failing to produce the complete O antigen. References 6: 4 Russian, 2 Western.
[168-12172]

UDC 547.963.32.04

NATURAL COVALENT COMPOUNDS OF VIRAL PROTEINS AND NUCLEIC ACIDS

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 8, No 12, Dec 82
(manuscript received 26 May 82) pp 1581-1606

VARTAPETYAN, A. B., Interfaculty Scientific Research Problems
Laboratory of Molecular Biology and Bioorganic Chemistry
imeni A. N. Belozerskiy, Moscow State University imeni M. V. Lomonosov

[Abstract] A review is provided of the natural covalent linkage between viral nucleic acids and proteins, covering both DNA and RNA animal and bacterial viruses. In all cases investigated to date the protein is bound to the 5'-end of the viral nucleic acid via a phosphodiester bond. While in the majority of cases the functional significance of such complexes has not been elucidated, in at least some cases they function to initiate nucleic acid synthesis. In other cases, such proteins appear to be involved in regulating translation, as in the case of RNA translation in picornaviruses which is under the control of the VPg protein. Other possibilities include protein involvement in the packaging of viral nucleic acids. Figures 5; references 201: 9 Russian, 192 Western.
[152-1217]

PHARMACOLOGY AND TOXICOLOGY

UDC 557.3.08:543.424:547.96

CONFORMATIONAL STABILITY OF TOXIN OF SEA ANEMONE RADIANTHUS MACRODACTYLUS

Moscow BIOORGANICHESKAYA KHIMIYA in Russian Vol 8, No 12, Dec 82
(manuscript received 28 Jun 82) pp 1644-1648

NABIULLIN, A. A., ODINOKOV, S. Ye., VOZHZHOVA, Ye. I., KOZLOVSKAYA, E. P. and YELYAKOV, G. B., Pacific Ocean Institute of Bioorganic Chemistry, Far Eastern Scientific Center, USSR Academy of Sciences, Vladivostok

[Abstract] The effects of temperature, solvents, and pH on the conformation of the polypeptide toxin (RTX-1) derived from the sea anemone Radianthus macrodactylus were investigated by means of circular dichroism spectra. The results showed that the structure of RTX-1 was unaffected by 60% methanol, but that the secondary and tertiary conformations were affected by 2,2,2-trifluoroethanol; changes in the spectra at pH 9-12 were due to ionization of tyrosine moieties and the changes involved only the tertiary structure and were reversible. Heating the toxin for 1 h at up to 80°C or storage for 24 h at pH values ranging from 1.4 to 12.5 had no effect on toxicity when tested on outbred white mice. Calculation of enthalpy changes, from the spectra at 201 and 275 nm (65 and 75 kcal/mole, respectively) in going from 40 to 80°C, showed that the reversible conformation changes involved the secondary and tertiary structure of RTX-1. Figures 4; references 11: 3 Russian, 8 Western.
[152-12172]

PUBLIC HEALTH

KIRGHIZ DRUG SUPPLY CLARIFIED

Frunze SOVETSKAYA KIRGIZIYA in Russian 16 Jan 83 p 2

[Unattributed article: "They Have Side-stepped the Sharp Barbs"]

[Text] A reportage entitled "Who Gains from a Shortage?" was published in SOVETSKAYA KIRGIZIYA on 22 October 1982. It dealt with interruptions in supplies of regular medicines long since available for public use, and with the complaints that these interruptions have provoked. One such complaint was cited from a veteran of the Great Patriotic War, N. Poletayev. He wrote about the lack of nitroglycerin, Valocordin, guttae Zelenini and other medicines for many months at the Frunze pharamacies.

Checks carried out at a number of pharmacies (Nos 1, 2, 38, 55, 111 and 240) confirmed the facts. Moreover, many of the popular drugs are still unavailable to this day.

Meanwhile, at the Main Pharmaceutical Administration Central Drug Warehouse large stores of drugs were found, considerably in excess of the reserves established by the republic Ministry of Health. Thus, at the beginning of each month during the first quarter of last year, amounts remaining exceeded the normativs: for nitroglycerin by a factor of 5-6, for Valocordin by a factor of 10-11, for pentaerythritol tetranitrate by a factor of 10 and so forth. In total, above-normativ reserves at the warehouses as at 1 January 1982 were worth almost R1.1 million.

The facts cited in the article provoked a sharp reaction from readers. Here, for example, is what Frunze resident Yu. Grebennikov writes: "I think that the reportage 'Who Gains from a Shortage' will leave no one indifferent. One way or another we all use medicines. But often, instead of help you get the stereotype answer: 'there is no medicine.'"

The editorial received an answer to the matters dealt with in the reportage from the republic deputy minister of health, N.I. Derevyankina. This is what she writes: "An additional, detailed check was made of drug supplies for the public by a specially created commission. The instances cited in the article occurred in connection with about 500 designated drugs supplied for the republic on a once-a-year basis. In addition, deliveries of more than 300 designated drugs are systematically disrupted... In this connection the

Main Pharmaceutical Administration has been forced to set up a definite reserve store at the warehouses for the purpose of the rational utilization of drugs; this applies especially to agents for the treatment of cardiovascular diseases."

But the reportage dealt not with all drugs, but with quite specific ones: nitroglycerin, Valocordin and pentaerythritol tetranitrate. During 1980, 1981 and 1982 they were delivered every quarter, and not once a year as is stressed in the response. And there were no interruptions in their deliveries.

It is scarcely convincing to justify the actual stocks of agents for the treatment of cardiovascular diseases and the shortages in the pharmacies by some need "to have definite reserve stores for a year."

Yes, of course, reserve stocks are needed, but what kind? And in any event this was not what they said at the Central Drug Warehouse. According to existing normativs, reserves should not exceed 15-20 percent of drugs in short supply to the therapeutic establishments and pharmacies in Frunze city amd rayons of republic subordination.

The harm stemming from the creation of large and sometimes unjustified reserves at the warehouses was shown in the article using the example of the drug hyaluronidase, which is in short supply and which sometimes up to now has been stored until its shelf-life has expired by 1.5-2 months. However, this fact was ignored in the reply. Meanwhile, in accordance with USSR Ministry of Health order "On Procedure for the Distribution of Drugs Entering the Pharmacy Network in Limited Supplies and Providing Them for Patients," they should be regulated by the commission and distributed in good time to the pharmacies and therapeutic establishments. And this is not being done!

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CAUSES OF FETAL AND NEONATE DEATH

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 9, Sep 82 (manuscript received 26 Oct 81) pp 15-18

[Article by I. N. Mironchik, L. G. Kulazhenko, Ye. K. Tropnikov, S. M. Polyakova and V. N. Serzhanina, Department of Pathological Anatomy (headed by Prof I. N. Mironchik), Minsk Medical Institute]

[Text] Clinicopathological analysis of perinatal mortality is important to the matter of further lowering it.

We made a multifactorial study of causes of death of 1155 fetuses and neonates on the basis of pathoanatomical examination of cadavers, which was made at the centralized pediatric pathoanatomical laboratory in Minsk in 1977-1979. Of them, 60% were male, 39.7% female, 0.2% hermaphrodite and 0.1% undetermined sex. Premature fetuses constituted 54%, term 45% and over term 1%; there were 33 twins, 1 triplet,* 24% prenatal deaths, 23.5% intranatal deaths and 52.5% deaths in the early neonatal period. Live births constituted 43.2% at up to 1 day of age, 39.2% at 2 to 3 days and 17.6% at 4 to 7 days of age. Table 1 lists the incidence of the main diseases (causes of death) of the fetus (infant) in the different perinatal periods.

We included the following in other causes of death: viral respiratory infection (3 cases), sympathogonioma, sacrococcygeal teratoma, congenital leukemia, small intestinal strangulation, intrauterine candidal sepsis, encephalitis of undetermined etiology (1 case of each).

No complications of principal diseases were diagnosed in the prenatal period due to maceration and cadaver autolysis, which were observed in all cases. The concomitant diseases diagnosed in this period included congenital developmental defects in 2.1% of the cases and diabetic phetopathy in 0.3%.

In the fetuses that expired in the intranatal period due to birth trauma (of the skull, brain and spine), the most frequent complication was asphyxia. Concomitant diseases included pneumonia (1.5%), congenital developmental defects (3.4%) and nonfatal birth trauma (4.8%).

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*Translator's note: Unclear whether reference is made to percentage, sets of twins/triplets or number of fetuses or neonates.

In the cases of death in the early neonatal period due to cerebrocranial birth trauma and trauma to the spine, the chief complication was also asphyxia. We observed less often subarachnoid hemorrhages with asphyxia (4 cases), hemolytic disease (2), hemorrhages in the adrenals (3), stomach (1), intestine(1) associated with asphyxia, pneumothorax (2), sepsis with catheterization of veins (2), thrombosis of renal veins in the presence of diabetic phetopathy, hemoperitoneum with trauma to the liver (1 case each). We always found aspiration pneumonia as a complication in neonates with congenital defect of esophageal development.

Table 1. Principal diseases that were the cause of fetal (infant) death, %

CAUSE OF DEATH	DEATHS			
	PRE-NATAL	INTRA-NATAL	FIRST-POSTNATAL WEEK	PERI-NATAL
ASPHYXIA	61,6	72,2	9,1	36,6
CONGENITAL DEVELOPM.DEFECTS	16,2	15,5	23,8	19,9
PNEUMOPATHY	—	—	34,1	17,8
PNEUMONIA	1,7	1,5	11,3	7,5
BIRTH TRAUMA	—	6,2	14,7	8,7
HEMOLYTIC DISEASE	5,5	2,2	1,6	2,6
UMBILICAL SEPSIS	—	—	2,6	1,3
HEMORRHAGIC DISEASE	—	—	0,7	0,3
TOXOPLASMOSIS	0,7	0,4	0,1	0,4
LISTERIOSIS	0,7	0,4	0,3	0,4
FETUS (INFANT) BORN TO DIABETIC MOTHER	0,3	0,4	0,5	0,4
GENERALIZED CYTOMEGALIA	—	0,4	0,5	0,7
OTHERS	1,0	0,8	0,7	0,7
UNDETERMINED CAUSE	12,3	—	—	3,3
TOTALS	100,0	100,0	100,0	100,0

The concomitant diseases in this period included nonfatal birth trauma of diverse localization (1.2%), congenital hypotrophy (2.4%), suppurative omphalitis (0.3%) and intestinal coli infection (0.5%); other diseases included umbilical sepsis, respiratory viral infection (1 case each). This pathology could be evaluated as competing diseases. It was observed in the presence of serious congenital developmental defects incompatible with life.

Asphyxia was in first place among the chief causes of overall perinatal mortality. According to our analysis, its share constituted 36.6%. According to various authors (P. S. Gurevich et al., 1973; I. N. Zhelokhovtseva, 1977; S. S. Khartmane et al., 1977; R. K. Ignat'yeva et al., 1980), perinatal deaths due to asphyxia constituted 22.6 to 67.5% of all perinatal deaths.

Table 2. Principal causes of fetal (infant) asphyxia and death, %

CAUSE OF DEATH	DEATHS			
	PRE-NATAL	INTRA-NATAL	FIRST WEEK OF LIFE	PERI-NATAL
A. RELATED TO MATERNAL PATHOLOGY				
TOXICOSIS OF PREGNANCY	19,3	8,2	7,2	11,3
PYELONEPHRITIS	2,3	0,5	2,7	1,9
GLOMERULONEPHRITIS	0,6	—	—	0,1
ESSENTIAL HYPERTENSION	3,5	1,0	2,3	2,2
THREAT OF INTERRUPTION OF PREGNANCY	1,2	—	—	0,3
HEART DEFECT	1,2	0,5	1,1	1,0
ACUTE VIRAL RESPIRATORY INFECTIONS	1,7	0,5	1,6	1,3
RAPID DELIVERY	—	—	0,8	0,3
POOR LABOR ACTIVITY	—	5,0	6,0	4,1
ENDOMETRITIS DURING LABOR	—	2,6	1,8	1,6
NARROW PELVIS	—	—	0,8	0,3
PNEUMONIA	—	—	1,8	0,8
OTHERS	2,9	2,0	—	1,4
TOTALS	32,7	20,3	26,1	26,6
B. RELATED TO AFTERBIRTH PATHOLOGY				
A) PLACENTA: HYPOPLASIA	12,2	1,5	—	3,8
PRESENTATION	—	5,0	12,1	6,6
PREMATURE SEPARATION	6,8	18,4	7,3	10,2
ADHESION	—	1,0	3,7	2,0
INFLAMMATION	5,3	0,5	0,4	1,7
OTHERS	2,3	1,0	—	1,0
TOTALS	26,6	27,4	23,5	25,3
B) UMBILICUS: ABSOLUTELY SHORT	1,7	4,5	1,1	2,4
APLASIA OF ONE ARTERY	1,2	—	—	0,3
ATTACHMENT TO MEMBRANE	2,9	2,0	0,4	1,6
STRANGULATION	18,6	12,3	7,2	13,6
NODULATION	1,7	2,6	0,4	1,4
LOOP PROLAPSE	2,3	6,6	0,4	2,8
EXCESSIVE TORTUOSITY	0,6	0,5	—	0,3
TOTALS	29,0	28,5	9,5	22,4
C) MEMBRANES: DELAYED FLOW OF WATERS	1,2	16,8	24,0	13,9
HYDRAMNION	1,7	0,5	5,2	2,9
TOTALS	2,9	17,3	29,2	16,8
C. RELATED TO FETAL PATHOLOGY				
MULTIPLE BIRTH	3,5	3,0	1,5	2,1
OVER TERM	—	2,0	—	0,3
ANOMALOUS POSITION AND PRESENTATION	—	—	6,0	2,5
GIGANTISM	—	—	0,4	0,5
TOTALS	3,5	5,0	7,9	5,4
D. CAUSE OF ASPHYXIA NOT DETERMINED	5,3	1,5	3,8	3,5
OVERALL	100,0	100,0	100,0	100,0

The principal causes of fetal (infant) asphyxia and death are listed in Table 2.

In each perinatal group, the percentage of adverse factors that could be instrumental in onset of asphyxia was higher than the percentage of only principal causes. In general, toxicosis of pregnancy was observed in 21.3% of the cases of death due to asphyxia, pyelonephritis in 3%, threat of interrupted pregnancy in 8.0%, essential hypertension in 2.5%, heart defects in 2.5%, rapid delivery in 9%, poor labor activity in 6.5%, endometritis in labor in 1.6% and other adverse factors in 8.4%.

Congenital developmental defects are in second place (19.9%) in the structure of overall perinatal mortality. Although they were found in 21.1% of the cases, they were not assessed as the chief cause of death in 1.2% but as concomitant pathology. According to the 9th revision of the WHO classification, congenital developmental defects were distributed as follows: defects in development of the central nervous system constituted 17.3%, heart and vessels 8.7%, digestive organs 14.9%, urinary organs 6.2%, bones and muscle 5.7%, reproductive organs 0.4%, chromosome syndromes 10.3%, syndromes of multiple congenital developmental defects 26.7% and Siamese twins 0.8%. According to the data of G. I. Lazyuk (1980), in Minsk, 12% of all congenital developmental defects were related to chromosome pathology, 17% to mutations of one gene, over 40% were determined by multiple factors and only 2.7% by teratogenic factors.

Pneumopathies included the following: atelectases, edema-hemorrhage syndrome, hyalin membranes, deep aspiration of perifetal contents. A comprehensive retrospective analysis of these cases revealed that such pathology was usually preceded by fetal asphyxia, microtrauma to the head and spine, and analogous risk factors related to maternal and afterbirth pathology, as in the case where the diagnosis of "asphyxia" was indicated as the chief cause of death. In some cases, asphyxia developed some time after birth and, in our opinion, it was attributable to development of decompensation of discrete respiratory insufficiency.

Infections, including umbilical sepsis, were in 4th place (10.3%) among perinatal death causes. According to the data of a number of authors (V. M. Afanas'yeva et al., 1976; I. N. Potapova et al., 1976; Ye. L. Kiparisova, 1980; S. A. Stepanov et al., 1980), at the present time umbilical sepsis is not so rare, and this is due primarily to the fact that there is a significant share of infants with adverse background diseases and states (immaturity, congenital developmental defects, etc.). Pneumonia occurred in the form of benign intrauterine aspiration pneumonia and, as a rule, it developed in infants born with premature rupture of membranes.

Birth trauma was in 5th place (8.7%). We shall not analyze it here according to type and localization. The principal causes of birth trauma were abnormalities referable to position and presentation of the fetus (42.0%), premature discharge of amniotic fluid (12.5%), poor labor activity (10.6%), rapid delivery (7.7%), abnormalities referable to soft tissues and bone in the birth canal (8.6%), toxicosis of pregnancy (6.7%), gigantism (weight in excess of 4500 g) of the fetus, over-term gestation period (1.0%) and in 3.8% of the cases the cause of birth trauma was not established.

In all cases of hemolytic disease it was due to incompatibility of Rh factor. There was prevalence of its most serious forms--edematous and so-called fourth form, when the fetus perishes prematurely and is born macerated.

In 3% of the cases, the principal cause of fetal death was not determined due to severe maceration and absence of indirect data.

Conclusions

1. Asphyxia is in first place among causes of perinatal deaths, followed by congenital developmental defects, pneumopathy, birth trauma, infections, hemolytic disease of neonates and other diseases. It was not possible to establish the cause of perinatal death in 3% of the cases.

2. The chief causes of asphyxia were maternal pathology, placental pathology, pathology of umbilicus and afterbirth membranes, factors related to pathology of the fetus proper and in 3.5% of the cases the cause of asphyxia was not clear.

3. With regard to perinatal infections, the main causes of perinatal death were pneumonia, umbilical sepsis, cytomegalia, listeriosis, toxoplasmosis and acute viral respiratory infections.

6. The chief causes of birth trauma were the following factors: abnormal fetal position and presentation, premature rupture of amniotic sac, poor labor activity, abnormalities of soft tissues and bones in birth canal, rapid delivery and others. In 3.8% of the cases the cause of birth trauma could not be determined.

BIBLIOGRAPHY

1. Afanas'yeva, V. M., Pokrovskaya, L. Ya. and Leonova, L. V., "Analysis of Sepsis in Children According to Section Findings," ARKH. PAT., No 10, 1976, pp 12-18.

2. Gurevich, P. S. and Khamidullina, A. Kh., "Causes of Perinatal Death," KAZANSK. MED. ZHURN., No 4, 1973, pp 57-58.

3. Zhelokhovtseva, I. N., "Methods of Analyzing Causes of Perinatal Mortality," PEDIATRIYA, No 5, 1977, pp 51-55.

4. Ignat'yeva, R. K. and Kaderkayeva, N. I., "Study of Multiple Causes of Perinatal Mortality Based on Special 'Certificate of Perinatal Death'," ARKH. PAT., No 1, 1980, pp 72-77.

5. Kiparisova, Ye. L., "Morphological of Contemporary Umbilical Sepsis," in "Aktual'nyye voprosy patologicheskoy anatomii detskogo vozrasta" [Pressing Problems of Child Pathological Anatomy], Saratov, 1980, pp 35-36.

6. Lazyuk, G. I., "Significance of Detecting Congenital Developmental Defects in Pathoanatomical Practice," ARKH. PAT., No 7, 1980, pp 24-28.

7. Potapova, I. N., Potapova-Vinogradova, I. N., Dyukova, I. I. et al., "Characterization of Umbilical Sepsis in Premature Infants," Ibid, No 10, 1976, pp 19-25.

8. Stepanov, S. A. and Grigorenko, A. A., "Current Problems of Sepsis in Children," in "Aktual'nyye voprosy patologicheskoy anatomii detskogo vozrasta," Saratov, 1980, pp 35-36.

9. Khartmane, S. S., Skrastyn'sh, Ya. P. and Melka, D. Z., in "Ob"yedinennaya nauchno-prakticheskaya konferentsiya detskikh vrachey i akusherov-ginekologov Latv. SSR: Tez. dokl." [Summaries of Papers Delivered at Joint Scientific and Practical Conference of Latvian Pediatricians and Obstetrician-Gynecologists], Riga, 1977, pp 48-56.

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STATUS AND PROSPECTS FOR DEVELOPMENT OF NEONATOLOGY IN BELORUSSIAN SSR

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 9, Sep 82 (manuscript received 1 Jul 82) pp 39-41

[Article by A. K. Ustinovich and V. K. Zubovich, Belorussian Scientific Research Institute of Mother and Child Care and Belorussian Institute for Advanced Training of Physicians]

[Text] The neonatal period holds a large place in the structure of infant [or child] mortality. For this reason, further success in safeguarding child health depends largely on use of the reserves referable to organizational and methodological work, as well as scientific research in the field of neonatology.

Belorussian scientists and health care organizers have made a substantial contribution to development of this branch of medicine. To date, a well-ordered system has been established in this republic with regard to organization of medical care of the newborn. In all oblasts and in Minsk, departments and wards have been deployed and are in operation for the care of premature neonates (first and second stage), early rehabilitation after birth trauma and injuries, treatment of infectious and noninfectious (metabolic) pathology, surgical correction of congenital developmental defects. A republic scientific research center for mother and infant care has begun to take shape on the basis of the Belorussian Scientific Research Institute of Mother and Child Care [BSRIMCC] and 7th Minsk Municipal Clinical Hospital. Under the current five-year plan, a medical and diagnostic laboratory building, dairy kitchen and other premises will be built for this center.

Much work is being done in this republic to outfit departments of specialized medical care for the newborn with modern medical and diagnostic equipment and apparatus, introduce into practice the latest methods of examining and treating infants in the neonatal period, progressive forms and methods of neonatologist work. Extensive use in the republic of methods of caring for premature infants in microclimate incubators ("Medikor" type) has lowered mortality of infants with low birth weight by almost 1.5 times in the last 10 years. A significant decline in mortality among infants up to 1 day old was obtained due to development and introduction to neonatology of intensive care and resuscitation. Perinatal committees have been found and are working actively at oblast centers and in Minsk; they conduct in-depth analysis of causes of perinatal morbidity and mortality in the neonate period, develop and help to implement measures to improve organization of neonatal medical care. The position of adjunct [or auxiliar--not on regular staff] chief neonatologist of the Belorussian Ministry of Health was established to coordinate and manage this extremely important branch of pediatrics; at the present time this position is held by the director of the BSRIMCC.

However, success in mother and child care would be inconceivable without serious scientific investigations on pressing problems of neonatal physiology and pathology, without purposeful work to introduce their results to health care practice, without a constantly operative system of measures to advance the training of pediatricians (including district ones) and obstetrician-gynecologists in the area of neonatology.

In this anniversary year, it must be noted that Belorussian scientist-physicians have been working for many years on actively developing the scientific bases of neonatology. The method of I. S. Legenchenko for resuscitation of seemingly lifeless neonates has been used for over 3 decades in obstetric institutions of our country. The causes and mechanisms of asphyxia, detection and treatment of this serious pathology of the neonate period have been covered extensively in the works of L. S. Persianinov and the school of Soviet obstetrician-gynecologists and neonatologists that he founded. The disciplines of V. A. Leonov, founder of the Belorussian pediatric school conducted a series of in-depth studies dealing with neonatology.

The scientific and organizational-methodological aspects of neonatology have been the concern of the BSRIMCC for 15 years. Multiaspect work on advancement of physicians' training in neonatology with use of work places, by means of holding seminars and conferences, courses of information and training through specialized residencies, etc., is also being conducted at that institute.

Some research on neonatology is also being pursued in the pediatric and obstetrical-gynecological departments of the republic's medical VUZ's and the Belorussian State Institute for Advanced Training of Physicians, at which Belorussia's first department of neonatology was founded in 1981. This is very relevant to improvement of organization of training physicians in neonatology after they have received their diplomas [doctorate?].

In the past period, much factual material has been accumulated on physiology and pathology of the neonatal period, different effects on it of the distinctions in course of pregnancy and labor. The main criteria of a healthy child referable to the function of the cardiovascular system (R. E. Mazo, L. T. Lomako, R. A. Polyakova, S. K. Levitskaya and others), respiratory function (V. Ya. Beletskaya, L. P. Tomova, L. F. Krylova and others), distinctions of the gastrointestinal tract (I. V. Korshun, M. P. Sheybak, L. V. Yevets and others), immunological compatibility of mother and fetus (G. A. Kalyuzhin, V. M. Shostko and others), metabolism of bilirubin and lipids (A. K. Ustinovich, M. N. Stetsko, V. S. Danil'chik, V. K. Zubovich, L. N. Machulina, V. Yu. Dombrovskiy and others), hormonal status (V. K. Zubovich, A. K. Ustinovich, M. P. Sheybak, V. A. Mazur, G. A. Shishko and others) and pathological mechanisms of skull birth trauma in neonates (G. M. Chernous, V. A. Kachan and others) have been defined. Determination has been made of the normal [standard] levels of many biochemical and functional parameters of healthy and sick term and premature neonates (L. G.

Dolzhnikova, Yu. Yu. Komlikov, G. F. Yelinevskaya and others), parameters of physical development of term and premature infants in urban and rural areas (L. V. Paraskevich, O. K. Kuz'menkova, I. B. Dzikovich and others).

An expert assessment of causes of neonatal death has been worked out and introduced; determination has been made of neonate death risk factors and a set of organizational-methodological measures was elaborated for use of all available resources to lower such mortality in the first 27 days of life (A. K. Ustinovich, M. P. Deryugina, M. D. Markovskaya and others).

Analysis of the studies enables us to draw an important conclusion: the term neonate has highly developed adaptive capacities, which create optimum conditions for his subsequent growth and development, while the opinion that existed to date that some of their functional systems or other are underdeveloped is erroneous. The deficiency of adaptive capacities manifested from the very first days of life could be related to metabolic, hormonal and other changes that occur with the change to new, extrauterine living conditions and in connection with various pathological states. Thus, it has been determined that excessive migration of placental blood into the infant at the third stage of labor leads to impairment of processes of detoxification of bilirubin, as a result of increased competition in the system of uridine diphosphoglucuronic acid and glucuronyl transferase. This worsens acid-base balance in blood and a number of hemodynamic parameters, causes greater postpartum weight loss and retards gain, lowers repair capacities of the body and retards formation of the immunological system. It has been shown that all of these parameters are directly related to the level of passage with placental blood into the fetus of hormonal substances, in particular estrogens. Thus, estrogens that are instrumental in optimizing intrauterine conditions of fetal development become a factor in the neonatal period that diminishes the adaptive capacities of the infant.

Determination of the distinctive development of adaptive reactions of neonates served as the basis for elaboration of concrete recommendations on proper management of pregnancy and labor with due consideration of the interests not only of the fetus, but the newborn infant. An example of such an approach is the method, which was proposed by the BSRIMCC of early ligation of the umbilical cord in the third stage of labor, and this has been quite effective in all cases of normal course of the gestation period. This work also demonstrated a need for further investigations to determine the optimum amount of placental transfusion for the infant in the presence of diverse obstetric pathology (premature birth, immunological conflict, fetal hypoxia, nephropathy of pregnancy). The study conducted by our group of electrophoretic mobility of erythrocytes made it possible to use this new indicator in diagnosing neonatal diseases. Determination of the link between hormone levels in the neonate and the fine mechanisms of the thrombocytic element of hemostasis made it possible to work out recommendations for the prevention of blood-clotting complications in the neonate period in infants who sustained asphyxia during labor.

At the same time, practical public health care advances several new priority tasks for the neonatologists of Belorussia.

The accumulated facts are indicative of the need to direct the main research in neonatology toward development of methods of correcting impaired functions in infants to prevent future adaptation problems in the neonatal period. In this respect, attention must be given not only to physiological factors, but effects of drugs on the infant during the period of its adaptation to extrauterine life; it is imperative to determine optimum dosage for term and premature babies, healthy and sick neonates, with normal and pathological course of pregnancy and labor, i.e., there must be active scientific elaboration of fetal and neonate pharmacotherapy.

The question of management of pregnancy and parturition before term due to different causes requires a speedy answer; it is imperative to develop new methods of treating the mother and fetus to prevent the syndrome of respiratory disorders, new regimens for optimum care of premature infants, nursing and artificial [bottle?] feeding. This is related to in-depth investigation of the distinctions in course of the period of postpartum adaptation of infants differing in degree of prematurity, studies of function of different organs and systems, formation of metabolic processes. Special attention must be devoted to questions of optimum infant feeding, starting at the moment of its birth (with consideration of early start of nursing) with normal and complicated course of the neonatal period.

Problems of intensive care and resuscitation of neonates, indications and contraindications for infusion therapy and parenteral feeding, qualitative and quantitative composition thereof in the presence of various pathological states merit comprehensive work.

Work on further determination of etiology, pathogenesis, diagnosis, treatment and prevention of sepsis, acute respiratory diseases and pneumonia in neonates is of great practical importance.

In spite of the work already existing on the distinctions of hormonal influences on the neonate, the problem of optimum use of hormone therapy for pregnant women and neonates has not yet been solved; there are no criteria to determine its necessity and contraindications, based on long-term follow-up of physical and mental development of such infants, the function of their endocrine glands and development of reproductive capacity.

The many tasks of first and foremost importance that are confronting neonatology make it imperative to promptly analyze and coordinate the research conducted in this republic, to move from initiative work to requested [ordered] studies based on long-term special-program plans coordinated with this republic's ministry of health.

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PHYSICIAN ERRORS IN WRITING OUT PRESCRIPTIONS

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 9, Sep 82 (manuscript received 11 Dec 81) pp 41-43

[Article by N. M. Kurbat, F. A. Bogdanovich, V. I. Bunimovich and V. P. Vdovichenko, Grodno Medical Institute, health department of Grodno Oblispolkom and Grodno Oblast Pharmaceutical Administration]

[Text] A correctly written prescription is indicative of the high professional training of a physician, his erudition in the field of pharmacotherapy. It is not by chance that a prescription is called "Ars formulas medicas praescribendi"--the art of writing prescriptions. This is really an art, in which the physician should perfect himself throughout his life.

A prescription is an important document for the physician and pharmacist. Both bear responsibility for this document, which has the force of a law. The former is responsible for correctly prescribing a drug and the latter for correctly dispensing it according to the written prescription. Mistakes made in writing out a prescription or dispensing a drug in the pharmacy could cause irreparable harm to the patient's health.

In recent years, the USSR Ministry of Health has approved several standard-related documents that spell out the rules of prescribing drugs. The main one is the order of the USSR Ministry of Health, No 1230, dated 27 December 1976: "Procedure for writing out prescriptions for ambulatory patients and dispensing prescribed drugs." In the past period, this order has been revised to include the changes and additions spelled out in subsequent orders and circulars of the USSR Ministry of Health and Main Pharmaceutical Administration. This order contains exhaustive regulations on the form and structure of a prescription, and it sets incontestable rules on how to write it up.

In the Soviet literature, there are virtually no articles that analyze the main errors encountered when phycisians prescribe some drug or other. The literature of this sort deals, in most cases, to quantitative analysis of main prescriptions (individual outpatient formulas) in different parts of our country (V. F. Goren'kov et al., 1970, 1971; V. I. Prokopishin et al., 1979). Two monographs, which have been published in recent years (V. I. Prokopishin et al., 1978; Ya. B. Maksimovich, 1979), describe the rules for writing prescriptions, but do not analyze the mistakes made by practicing physicians in writing up prescriptions. Only in one article (I. K. Danusevich et al., 1970) are data submitted concerning mistakes in 159 prescriptions made by physicians of Belorussian SSR. Although this article was published prior to the order No 1230 dated 27 December 1976 of the USSR Ministry of Health, it mentions the principal causes of mistakes in writing up prescriptions: "forgotten knowledge" about relevant orders, carelessness on the part of physicians, poor supervision on the part of management of therapeutic and preventive institutions, etc.

We analyzed 4234 prescriptions written up by physicians of therapeutic and preventive institutions in Grodno in November and December 1980. We included in this number prescriptions written on the usual forms with the seal [stamp] of the institution, as well as prescriptions for drugs that are subject to specific quantitative records by instruction of the USSR Ministry of Health.

All of the prescriptions were divided into groups, according to institutions, and each of these groups was divided according to the main forms of medication. The mistakes detected in this analysis were divided into two categories. The first consisted of errors related to direct infraction of items in order No 1230 of the USSR Ministry of Health. The second category of errors deals with incorrect (unacceptable [unconventional]) writing up of a given drug form.

The quantity of prescriptions written by physicians at different therapeutic and preventive institutions is not the same, and it depends on the quantity and contingents of patients. For example, the physicians of the institution that we arbitrarily named Association No 1 write 1916 prescriptions, those of Association No 2 886, Association No 4 445, Association No 7 336 prescriptions, etc. (Figure 1). Of the 4234 prescriptions, 1575 (37.2%) were written up correctly, without mistakes and 2659 (62.8%) incorrectly.

As shown by the results of the study, of all the known forms of drugs, tablets were prescribed the most often by physicians (Figure 2).

Orders for tablets were contained in 2772 prescriptions (65.3%). Powders were ordered in 209 (4.9%), solutions for internal use in 89 (2.1%), other liquid forms of drugs (standard solutions--mixtures, extracts, tinctures and others) in 662 (15.6%), injectables in 429 (10.1%) and soft forms of drugs in 73 prescriptions (1.7%).

The number of mistakes in writing prescriptions varied for different forms of drugs (Figure 3).

Fewest errors were found in prescriptions for solutions for internal and external use and the most for injectables and powders. Errors related to infraction of items in Order No 1230 of the USSR Ministry of Health were encountered less often, in 35.6% of the cases, whereas mistakes referable to incorrect description of some drug form constituted 64.4% of all mistakes in prescriptions. Among errors of the former type, we most often found that the prescriptions were written in Russian. Such products as sodium adenosine triphosphate in vials, 5-NOK (5-nitro-8-oxyquinoline], LIV-52 [expansion unknown], Osarbon and Osarcid suppositories and others were written up in Russian. The institution stamp was missing from some prescriptions (2.3% of the total). In 1.8% of the prescriptions, the stamp was affixed when it was unnecessary, and most often they were referable to extremely scarce drugs (No-spa [Hungary], panangin [an asparaginate], sodium adenosine triphosphate, LIV-52 and others).

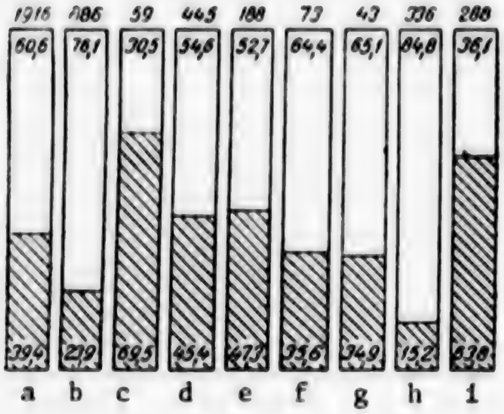

Figure 1.
Quantity of correctly and incorrectly written prescriptions in relation to total prescriptions received in pharmacies from different therapeutic institutions. Crosshatched part of bar shows number of correctly written prescriptions. Boxed-in numbers give percentage of correctly or incorrectly written prescriptions, and numbers above bars show total number of prescriptions

a) Association No 1
b) No 2
c) No 3
d) No 4
e) central rayon hospital
f) Association No 5
g) No 6
h) No 7
i) other therapeutic institutions in the city

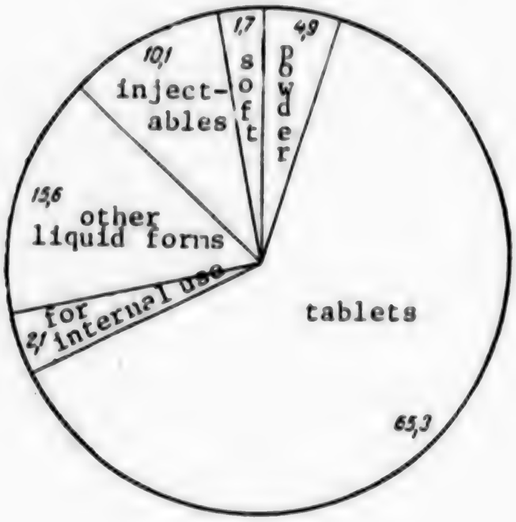

Figure 2.
Frequency of writing prescriptions for different drug forms (% of total number of prescriptions)

Of the second type of mistakes (related to incorrect writing of formula for a particular drug form), the following were the most common: in prescribing powders, standardized solutions (mixtures) and official ointments that were not divided into doses, no indication was given as to amount of product per package, and in prescriptions for simple tablets, the dosage per tablet or number of tablets prescribed was not indicated. Many mistakes were found in writing prescriptions for the compound powders, Depressin and Antigrippin. For example, in prescribing Depressin powder (total of 100 prescriptions), the physicians ordered nine different variants of incorrect prescriptions, and only 2% of the prescriptions for this drug were written up correctly.

The large number of incorrectly written prescriptions we found (62.8% out of 4234) enables us to outline the means of eliminating them. Most mistakes were related to lack of knowledge by physicians of specific drugs (particularly imported ones) and their negligence (haste) in writing prescriptions. Pharmacy workers did not always pay proper attention to mistakes in prescriptions and, in spite of the strict instructions contained in the orders, dispense drugs from such prescriptions.

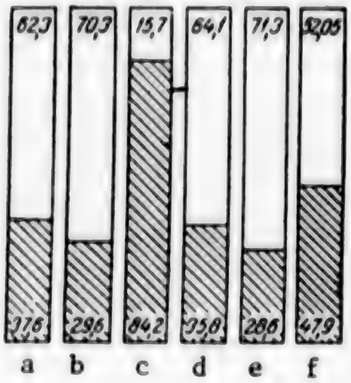

Figure 3.
Number of mistakes encountered in prescribing different forms of drugs. Cross-hatched part of bar refers to number of correctly written prescriptions. Boxed-in numbers indicate percentage of correctly or incorrectly written prescriptions

a) tablets
b) powder
c) solutions for internal and external use
d) other drugs in liquid form
e) injectables
f) soft forms of drugs

Conclusion

In our opinion, the following is required in order to reduce and completely eliminate mistakes in writing prescriptions:

> Offices should be organized in large medical institutions (hospitals and polyclinics) and medical information rooms [or parts of rooms] in walk-in centers of urban and rural hospitals, in which there would be systematized information about the most frequently used drugs and pharmacological groups.
>
> Each physician must have the "Drug Products Allowed for Use in the USSR" manual (Moscow, Meditsina, 1979).
>
> More attention should be devoted to medical prescription-writing when training physicians at medical institutes, particularly in clinical departments.
>
> All physicians and paramedical personnel who are allowed to write prescriptions must be familiar with the information letter of the department of pharmacology dated 20 April 1981, "Most Commonly Encountered Mistakes in Writing Prescriptions and Means of Eliminating Them."
>
> Pharmacy workers must require that attending physicians and management of medical institutions adhere strictly to the rules for writing prescriptions in the directive documents of the USSR Ministry of Health.

In our opinion, implementation of the above requirements will improve the quality of writing prescriptions and the effectiveness of dispensing drugs to the public.

BIBLIOGRAPHY

1. Goren'kov, V. F., Tol'tsman, T. I. and Khoron'ko, A. T., "Outpatient Prescriptions in Cost-Accounting Pharmacies of Belorussian SSR," FARMATSIYA, No 5, 1971, pp 68-71.

2. Goren'kov, V. F., Khoron'ko, A. T. and Tol'tsman, T. I., "Medical Prescriptions and Some Means of Improving Dispensation of Drugs to the Public," ZDRAVOOKHRANENIYE BELORUSSII, No 3, 1970, pp 52-57.

3. Danusevich, I. K. and Urvantsev, I. F., "Physician's Responsibility in Writing Prescriptions," Ibid, No 9, 1970, pp 77-78.

4. Maksimovich, Ya. B., "Prescription, Incompatibility and Side-Effects of Drugs," Kiev, 1979.

5. Prokopishin, V. I., Safta, V. N. and Cheban, N. M., "Writing Prescriptions, Dispensing and Storing Drugs," Kishinev, 1978.

6. Prokopishin, V. I., Mokhorya, I. P., Safta, V. N. et al., "Study of Outpatient and Polyclinic Prescriptions in Pharmacies of Moldavian SSR," ZDRAVOOKHRANENIYE (Kishinev), No 2, 1979, pp 30-33.

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FIRST BELORUSSIAN SCIENTIFIC AND PRACTICAL CONFERENCE ON 'THE HEALTHY CHILD'

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 9, Sep 82
pp 75-77

[Article by L. V. Paraskevich and L. I. Sandrigaylo, Minsk]

[Text] In our republic, exceptionally great attention is devoted to raising and forming healthy children. Scientific research institutes, departments of medical VUZ's, an army of many thousands of physicians and paramedical personnel on different levels of the public health system are concerned with this. Considerable knowhow has been gained in Belorussia and some achievements made in implementing extensive preventive measures among healthy children. The First Republic Scientific and Practical Conference on "The Healthy Child" convened on 27-28 May 1982 in Vitebsk. Its participants consisted of about 200 people. They included representatives of party and soviet agencies, scientists from the Belorussian Scientific Research Institute of Mother and Child Care (BSRIMCC), pediatric departments of medical institutes, scientific centers in Moscow, practicing pediatricians from all oblasts of our republic. In his opening remarks, A. G. Pivchenko, Belorussian deputy minister of health, stated that Belorussian is the first of all Union republics to hold such a conference.

Much attention was given to the paper delivered by K. N. Anishchenko, Belorussian first deputy minister of health, on "Medicosocial Aspects of Child Health." It was indicated in this paper that safeguarding the health of the young is a constant concern of the Communist Party and Soviet government, a manifestation of the genuine humanism of the Soviet state and social regime. The constitution of the USSR guarantees conditions for women that enable them to combine professional work and sociopolitical activity with motherhood. Medical tasks of safeguarding and strengthening the health of children are performed by expanding the network of women's consultation offices and maternity homes, pediatric polyclinics with healthy childhood and rehabilitation therapy departments, general [multispecialty] children's hospitals, children's sanatoriums and health centers for mothers and children, improving their equipment and expanding training of pediatricians.

Medical science and, in particular, its new branch--perinatology--plays an important role in safeguarding children's health.

Further improvement of mother and child care, provisions for harmonious physical and spiritual development of the young generation occupy a prominent place among the basic directions of socioeconomic development of the USSR in 1981-1985 and for the period up to 1990, approved by the 26th CPSU Congress.

At this conference there was discussion of questions of organization of preventive work among healthy children, as well as various aspects of adaptation, development and formation of functions in healthy children.

L. V. Paraskevich, head of the Administration of Lechprofpomoshch [therapeutic and preventive care] of Children and Mothers, Belorussian Ministry of Health, devoted his paper to organizational aspects of preventive work among healthy children in Belorussian SSR.

In the years of the 10th Five-Year Plan, there was considerable strengthening and expansion of the material and technical base of child health care in the republic. Seven pediatric polyclinics (Vitebsk, Minsk, Brest, Bobruysk), three children's hospitals (Minsk, Mogilev), two buildings of pediatric hospitals, a children's sanatorium on Lake Naroch, three dairy kitchens (Minsk, Bobruysk, Smorgon) and a child center in Borisov were constructed and put in operation. A children's hospital in Pinsk and a building for the children's hospital in Vitebsk are under construction. The speaker noted that special attention is given to development of a network of children's polyclinics and subdivision of pediatric districts into smaller ones.

There are inoculation offices, centers for collection of donor milk and rooms for rearing healthy children at all of the children's polyclinics in this republic. Proper organization of child nutrition is important. The dairy kitchens that exist in all cities and rayon centers serve 10-15 kinds of sweet and sour milk mixtures, and hot meals have been organized in the schools. Active games, with elements of corrective exercise, are practiced widely in creches and nurseries for physical training and conditioning of children; all school children are engaged in physical culture in accordance with their age and physical condition. In recent years, a network of physical culture and health-improving combines (FOK) and children's sections within them has been growing in our republic in the system of the Ministry of Housing and Municipal Services. There, children learn to swim, perform esthetic gymnastics, rhythmics, acrobatics, figure skating, etc.

The extensive work done in this republic in the area of child health care has yielded positive results. The index of infant health is rising each year. At the same time, L. V. Paraskevich mentioned the need to further raise this index. "Children should not get sick, they should always be healthy, cheerful and happy, since they are our replacements and they will build communism in our country," the speaker emphasized.

The topic of Prof R. V. Tonkova-Yampol'skaya (Moscow) was "Medicopedagogic Aspects of Preschool Health Care." She observed that the principal preventive work with infants and preschool children is performed by children's polyclinics and preschool institutions. The district pediatrician must combine in his work medical knowledge with the fundamentals of rearing, upon which the level of development and condition of the child depend at this age. In recent years, there has been a change in structure of morbidity, particularly in weakened children. General neurotization of the public is increasing in connection with growing urbanization. A neurosis could develop even in infants. The speaker stressed the need for establishing the proper sanitary-hygienic conditions and psychologically healthy climate in groups. A regimen is instrumental in the formation of specific biorhythms which maintain a healthy body. R. V. Tonkova-Yampol'skaya observed that there is great closeness [or similarity] in the work of the physician and pedagogue in children's institutions. The term, "biomedical service," conforms well to the essence of preventive work with healthy children. This approach acquires particular importance with regard to infants, since the development and physical condition of this age group depend, by virtue of their anatomical and physiological distinctions, not only on adherence to all sanitary-hygienic requirements and health-improving measures, but rearing factors as an inseparable part of conditions under which they develop. Only the combination of medical and pedagogic work can be effective in proper development and strengthening of the health of children.

A. K. Ustinovich, director of the BSRIMCC, in his paper entitled "Criteria for Assessing the Health of Neonates and Infants," stressed the fact that, because of the intensive development of perinatal medicine, new approaches have emerged in recent years to determination of criteria of neonate and infant health status. A child's health is closely related to growth and harmonious development of the body, and it is formed under the influence of biological, physical and social factors. The biological, rather than chronological, age is acquiring increasing relevance to determination of indicators of maturity of the body. Evaluation of biological age and a child's health status must be made not only according to anthropometric and clinical data, but with use of modern physiological, biochemical, immunological, cytochemical and other tests. Growth and development of the fetus, health status of the newborn and infants are closely related to the health status of the mother, course of pregnancy and labor. Prevention and treatment of fetoplacental insufficiency of any etiology play an important role in formation of a healthy child. The onset and development of adaptive mechanisms in the early neonatal period constitute an extremely important criterion for assessing an infant's health status. It has been proven that one can purposefully affect the formation of mechanisms of adaptation and defense responsible for health. In this respect, the method of dosed placental transfusion, which was proposed recently, is particularly valuable. Investigation of hormonal relations between mother and fetus, hormonal metabolism in the neonate, formation of tissue and humoral immunity in the infant are very important to assessment of formation of the infant's defense mechanisms.

In the paper delivered by Prof I. N. Usov (Minsk), "Normal Constitution and Its Abnormalities as Factors of Resistance and Predisposition for Disease in Children," it was noted that each healthy child has its own individual "reaction norms" for organs and systems to exogenous influences. The range of such reactions is genetically determined. In the course of growth and development, the complete range is seldom used, and it is a reserve that could be used by the body with appropriate training and in certain circumstances. Children can be grouped according to anatomical and functional distinctions into several constitutional and functional types. Each has its own strong and weak points, which are largely involved in providing both resistance to some diseases and predisposition for others, and this is particularly demonstrable in the presence of anomalous constitution in children. This speaker indicated, in conclusion, that knowledge of the constitutional distinctions of a child is particularly needed by a pediatrician for purposeful prevention of diseases and active strengthening of the child by means of regimen, nutrition, conditioning, physical culture and sports.

Growth, development and morbidity of children depend largely not only on the physical condition of the child but on the condition of the environment. This was discussed by N. T. Lebedeva (Minsk), in her paper, "Hygienic Aspects of Formation of the Healthy Child." For this reason, the efforts of physicians in all specialties must be directed toward hygienic measures not only for the child, but his environment. It is important to investigate the study and work load of children in different types of children's institutions, prepare differentiated descriptions of each form of activity and special regimens for children of different ages.

Interesting papers were delivered at the conference by Prof Ye. P. Sushko, head of the Department of Pediatrics at Voronezh State Medical Institute ("Functional Distinctions of the Biliary System of Children"), and E. A. Zubovskiy, chief pediatrician of the Belorussian Ministry of Health ("Prevention of Hepatobiliary Diseases"). The papers of L. V. Druzhinina (Moscow), L. N. Machulina (Minsk) and Prof M. P. Sheybak (Grodno) were concerned with various aspects of proper, scientifically validated nutrition for children of different ages.

"Sanitary and Hygienic Education of Parents as One of the Most Important Factors in Strengthening the Health of Children" was the topic of a paper delivered by M. P. Deryugina (Minsk). Calling attention to the dissimilarity in informedness of parents on various questions of hygienic rearing of infants, she dwelled on the fact that children are not conditioned [strengthened, hardened] in all families. Many parents are not given the necessary information on this score by the district service. Sometimes, the pediatric service underestimates the importance of hygiene education of parents to development of healthy children. Special attention must be given to campaigning for proper organization of optimum nurturing and sets of measures for hardening in the home.

Several papers and reports were delivered at this conference on the knowhow and achievements of the pediatric service in preventive work with healthy children in different oblasts, progressive methods in the work of district pediatricians in urban and rural areas. E. S. Dombyalova, chief pediatrician of the Vitebsk Oblast Health Department, reported that in this oblast subdivision of pediatric districts [into smaller ones] is essentially being finalized. Much attention is given to questions of organizing child nutrition, particularly for infants. Preschool-school departments have been established and are in operation at the children's polyclinics in Vitebsk, Orsha, Novopolotsk and Polotsk, which organize all of the work with healthy children. In this oblast, much attention is devoted to physical training of children in the RONO [rayon public health departments], to providing preschool and school institutions with the equipment for physical culture, building ministadiums there in accordance with the age of the children, developing children's sections in the physical culture and health-improving combines. E. S. Dombyalova stressed that it is impossible to bring up healthy children without the joint and coordinated efforts of children's polyclinics, preschool institutions and the family. The healthy child offices at polyclinics play an important part in advancing the public's knowledge in the area of sanitation and hygiene. S. P. Goretaya, chief pediatrician of the Minsk Oblast Health Department, reported on the results of introduction of the method of expert evaluation in the work of children's polyclinics in order to explore the possibility of improving their preventive work with children. Evaluation was made of such indicators as prenatal fetal care, continuity of the district pediatric service with obstetrician-gynecologists of women's consultation centers, prenatal visiting nurse service, education of mothers in young mother schools, prompt visits by physician and nurse to the newborn, coverage (percentage) by narrow specialists in examining infants, prevention of background diseases, etc. On the basis of the results of such expert assessment, there has been a change in the work style at this oblast's children's polyclinics. Purposeful work resulted in improvement of child health indicators.

V. I. Datskevich (Rogachevskiy Rayon, Gomel Oblast), shared with her experience in preventive work with infants in rural regions. All of the children are examined quarterly at FAP's [feldsher-midwife centers] by visiting teams of physicians. The FAP feldsher notifies parents in advance of a visit by such a team, or else they are informed through the health aktiv. Children who need consultations with narrow specialists are referred to the children's consultation office at a central rayon hospital on specific days, when a team of physicians consisting of an ophthalmologist, neuropathologist, surgeon, otolaryngologist and laboratory technician is scheduled to be there.

T. I. Kizik (Molodechno) talked about the work of a district pediatrician with the family. When scheduling work, consideration must given to the conditions in the home where the child is reared. In adverse families the children are sick more often. Their health index is one-half the size [in favorable families]. The main element of work in the district pediatric service is training and education in sanitation and hygiene for mothers and their families with regard to child care. It is important to be aware of the parent's life-style, delve into their psychology and gain trust, establish contact, become the family doctor. The health aktiv consisting of parents who are best trained in child care and medical workers is a real help in the district. This enabled us to raise significantly the child health index in the district, lower morbidity referable to respiratory infections and diseases, raise the percentage of completed inoculations against pertussis, tetanus and diphtheria.

Z. S. Kuchinskaya (Minsk) discussed her experience in teaching neonates to swim, as one effective conditioning method. The results of the work done in children's polyclinics of Moscow, Leningrad, Dnepropetrovsk and Panevezhis have shown that swimming is very important to strengthening the health of infants up to 1 year old. Swimming classes for children are organized in three stages at the 10th Children's Polyclinic in Minsk. At the first stage, a hygienic tub is used, at the second a small swimming pool and at the third a permanent pool. Analysis of the health status of children involved in swimming revealed that their psychomotor development was good and health index was 100%. A. A. Popova (Svetilovich District Hospital in Gomel Oblast) dealt with her experiences in organizing inoculation work in a rural medical district. Since 1979, the method of centralized inoculations has been adopted in that hospital. The charts of preventive inoculations on each child are forwarded to a centralized card file. A specially assigned nurse, who works in the centralized card file, keeps the records on inoculations according to the FAP's, enters them and, together with the FAP feldsher, prepares inoculation schedules for the next month. There is a permanent team (pediatrician and two nurses) that regularly visits FAP's under its jurisdiction 2-3 times a month to give children routine [scheduled] preventive inoculations and run the Mantoux test. In 2 years of work on a centralized basis, coverage of infants up to 1 year old with inoculations increased by 10%, and there was a 5% decline in number of children up to 7 years of age who were not immunized for medical indications. A. A. Kul'sha discussed the work in the office for rearing healthy children at the Children's Polyclinic No 2 in Brest. Advice is given to parents in the office of the district pediatrician on how to organize the regimen, optimum nursing and nutrition for children; parents are taught how to give massages and about exercises, as well as conditioning techniques. Classes for future mothers are held there, and children are prepared for enrollment in preschool institutions. The well-baby room is a good theoretical and practical base for advanced training of district nurses.

The conference participants learned about the work of the model children's institutions in Vitebsk.

A resolution adopted at the conference defined the means and concrete measures for this republic in the area of further improvement of work on rearing and developing healthy children.

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NORMS FOR PROFORMAS. ENTERPRISES OF MINISTRY OF THE MEDICAL INDUSTRY 'SOYUZLEKSINTEZ' ASSOCIATION ARE USING RAW MATERIALS WASTEFULLY

Moscow IZVESTIYA in Russian 6 Jan 83 p 3

[Article by V. Sisnev, deputy chief of the USSR People's Control Committee department for science, culture and public health, and N. Gorkin, committee inspector]

[Text] In our country much attention is given to the development and improvement of all public health matters and to the development and production of highly effective drugs. Satisfying demand for drugs is regarded as a primary task for medical science and the medical industry.

Much has been done and is being done. During the 10th Five-Year Plan and the first 2 years of the 11th Five-Year Plan the enterprises and scientific establishments of the medical industry developed 200 new drugs. The list was expanded and improvements were made in drugs used to treat cardiovascular, oncologic, neuropsychiatric and other serious diseases. The production of 20 new pediatric drugs was started up.

Nevertheless, as letters from workers testify, demand from consumers and the medical establishments for some kinds of drugs is not being fully satisfied. There are various reasons for this. One of the chief reasons is shortages of raw materials. Therefore, it is essential to save them and use them rationally.

A check by the USSR People's Control Committee has shown that of the 2,000 drugs used in everyday practice more than 500 are produced by enterprises of the "Soyuzleksintez" all-union production association. Unfortunately, they are suffering from chronic underfulfillment of plans for the deliveries of drugs in accordance with the products list. During the first 10 months of last year only 5 of the 12 enterprises managed to cope with the plan. Individual shops stand idle because of lack of raw material, and at the same time large losses of raw materials are permitted. Here are some specific examples.

Because of the low level of production discipline and the grossest violations of technologic processes, raw materials at the Usol'ye-Sibirskoye chemical and pharmaceutical combine are used carelessly, or more accurately, wastefully.

Because of this, planned norms for raw materials consumption in the production of a number of drugs are exceeded by 30 percent or more. During 1981 and the first 9 months of 1982, many thousands of rubles were overspent at the combine against confirmed norms, and also lost during the transportation and storage of raw materials.

Things are hardly better at the Latvian "Olaynfarm" association, which produces 64 drugs. Those conducting checks were told that the general director of the association, I. Penke, is a qualified specialist and experienced manager, and that the association is a model for leading cadres throughout the subsector. This is true. So it makes it the more inexcusable that for many years technology for the production of a number of items produced by the ton has not been improved, and that higher norms for the consumption of raw materials are being confirmed. It was established that during the first 9 months of 1982 alone, raw materials in short supply were overspent or lost to the tune of 400,000 rubles.

Serious shortcomings in the use of raw materials were also revealed at one of the largest enterprises--the "Akrikhin" plant near Moscow--and at the "Organika" production association in Novokuznetsk, and others.

Shortcomings in the activity of the "Soyuzleksintez" all-union production association became possible because of the low level of management in this important subsector on the part of the association chief N. Zolotarev and his inability to mobilize the staff and collectives of the enterprises to unconditional fulfillment of party and government demands to strengthen the regime of thrift with regard to material-technical resources. The association is operating unsteadily and making ineffective use of funds allocated by the state to develop its own material base. In 1981 growth rates for the subsector were only slightly more than half those for the medical industry as a whole. The plan for commodity output and sales was not fulfilled, and many articles were being produced at a loss.

The association is producing new drugs only with great delays. Plans for many of them are not fulfilled in time, and development drags on for many years. The regulations for some kinds of output produced by the ton have not been changed for decades. Tardiness is seen in the issuing of licenses for new drugs, and at the same time the scientific potential of subordinate scientific sections, which include hundreds of specialists, including many candidates and doctors of sciences, is not being fully utilized. The work of this subdivision has been left without guidance, and no in-depth studies are made or control exercised.

The shortcomings in the operation of "Soyuzleksintez" would be considerably less if the Ministry of the Medical Industry, and primarily the person with special responsibility for the association, deputy minister N. Shmakov, did not simply criticize the association for bad work, which, of course, should be done, but also, of course, did what must be done and resolved the questions of personnel placement in the subsector and gave concrete aid in bringing order to operations, particularly in closing the channels through which the large losses of raw materials occur. While rightly criticizing the shortcomings in the association's activities, the ministry is not displaying the necessary activeness in correcting them. As a result, the omissions have not been corrected. Worse, raw material losses and overconsumption have increased.

The ministry was obliged to deal with the shameful practice of material incentive for output, regardless of results from the utilization of raw materials, that had been set up in the "Soyuzleksintez" system. In 1981, enterprise management personnel alone were paid bonuses of R60,000 even though overspending and losses of raw materials to the tune of R5 million above planning norms had occurred. Each year some enterprise directors and chief engineers were being paid bonuses equivalent to four or five months' of their salaries.

Not only the "Soyuzleksintez" all-union production association but also the raw material suppliers, in particular three of the Ministry of the Chemical Industry's all-union production associations--"Soyuzkhlor," "Soyuzanilprom" and "Soyuzyodobrom"--are also guilty of raw materials losses and failure to make deliveries. During the first 11 months of last year the enterprises of these associations failed to deliver enough raw material to make 653 tons of various drugs. The association chiefs, A. Bondarenko, V. Razgulyayev and P. Polishchuk, explain the disruption in deliveries by "constant production difficulties," confusion in transportation, personnel shortages and so forth. The only thing they do not blame is the bad weather.

Results from the check have been considered at a meeting of the USSR People's Control Committee. The director of the Usol'ye-Sibirskoye chemical and pharmaceutical combine, N. Stetsenko, and the general director of the "Olaynfarm" production chemical and pharmaceutical association, I. Penke, have been reprimanded for lack of proper control over the economic and rational use of raw materials and for permitting losses of raw materials. They have also been held materially responsible. The chief of the Ministry of the Medical Industry "Soyuzleksintez" all-union production association, N. Zolotarev, has been severely reprimanded.

The committee has drawn the attention of the deputy minister of the USSR medical industry, N. Shmakov, to the poor control over the activity of the "Soyuzleksintez" all-union production association and its enterprises and the unsatisfactory fulfillment by the association of plans for the production of drugs in accordance with the products list and their delivery to public health organizations, and to the losses of raw materials that are being permitted.

The statement by the minister of the medical industry, A. Mel'nichenko, that the ministry will strengthen leadership over the "Soyuzleksintez" all-union production association, has been noted.

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RESULTS OF TREATMENT AND HEALTH-CARE WORK OF SPECIALIZED OPHTHALMIC CHILDREN'S CAMP

Moscow VESTNIK OFTAL'MOLOGII in Russian No 5, Sep-Oct 82 pp 61-62

[Article by Ye. I. Kovalevskiy, professor, chairman of Department of Eye Diseases, and A. P. Dedov, Pediatrics Faculty, Second Moscow Medical Institute imeni N. I. Pirogov]

[Text] Based on a decree of the USSR ministries of health and education and corresponding joint decrees in the Soviet republics, Young Pioneer camps for children with ametropic conditions have been organized upon our initiative since 1969.

Treatment and health-care programs are conducted in summer, as a rule at facilities of intermediate schools. However, treatment for children with poor vision can also be organized in municipal and suburban health camps, as well as in brigades or even orthoptic offices in conventional Young Pioneer camps.

At the initiative and with the direct participation of the Department of Eye Diseases of the Pediatrics Faculty of the Second Moscow Medical Institute, a Young Pioneer health camp has been conducted since 1967, based in an intermediate village school near Feodosiya. The camp is attended each year by 60-75 children.

All children enrolled in this camp go through a complete preliminary ophthalmological and general somatic examination. Upon arrival, the eye doctor of the camp does an in-depth ophthalmological examination on the children: visual acuity is determined down to the twelfth line without correction and with subjective correction; type and magnitude of clinical refraction is determined against a background of cycloplegia; The character of vision is established on a four-point instrument; accommodation reserves are determined; biomicroscopy and direct ophthalmoscopy are done with determination of the degree of exophoria and esophoria of the eyeball, as well as convergence.

The children are formed into groups according to age and pathology. The data given below refer to the year 1981. Seventy-two children attended the camp during the summer. Fourteen percent had been treated for three seasons or more, 36 percent had been treated for two seaons, and 50 percent were being treated for the first time.

Of the total number of children, 2 percent had second-degree myopia, fundic changes of various patterns and extents, and elongation of the sagittal axis of the eye, 18 percent had moderate myopia, also with changes in the fundus and dimensions of the eyes, 27 percent had weak myopia, 22 percent had spasm (tension) of accommodation (false near-sightedness), 10 percent had squint. 10 percent -- astigmatism, and 11 percent -- various degrees of hyperopia.

Children with spasm of accommodation and various degrees of nearsightedness were mainly given Avetisov-Mats "physiological massage" and irradiation on a large electric ophthalmoscope, children with amblyopia -- direct occlusion or one of the forms of penalization for 45 days.

Children with astigmatism and hyperopia were given Avetisov conditioning of accommodation reserves, exercises in developing fusion (synoptograph, mirror stereoscope and cheiroscope); in the case of isochronous or unstable binocular nature of vision, lessons were given on registration and merging (divider of fields of vision).

Children with squint and with failure of binocular vision were given exercises on the synoptophore (in presence of angle of squint and visual acuity of at least 0.2-0.4) with a mark on glass, on a cheiroscope, mirror stereoscope, muscle trainer, convergence trainer.

All children were given their assigned procedures twice a day (after breakfast and lunch).

In addition, in accordance with indications, the children were given medication: vitamin therapy (vitamins B_6, B_{12}, C_1), 0.1% solution of calcium, dibazol, cystein, gluconate (in instillation and internally). Children with spasm of accommodation and with extreme and moderate myopia were given a 1% solution of phenylephrine hydrochloride and papaverine at night, theophylline. nicotinic acid, galidor, vitamins A, B_1, dibazol (internally).

The complex of health measures included an obligatory 2-hour daytime nap, timed bathing and beach activity (in the shade), obligatory physical exercise in the morning, and also games involving components aimed at improving visual acuity (table tennis, basketball, badminton, volleyball) as well as general exercise and competitive games (soccer, jogging, hill climbing, hiking and so on).

Before starting work and in the course of work, the oculist-physician of the Young Pioneer camp gave talks and classes to the teachers and troop leaders to acquaint them with organization of the health aspects of the students' stay at camp, and the principal methods of treating children with poor vision in accordance with the principle of "making a game of treatment".

Pleopto-orthoptic treatment was done in specially equipped offices (classes); an athletic field was used for games; medication was given in the school medical office; general exercise procedures took place on the seashore where a special children's beach was set up.

As a result of combined treatment, the number of children with extreme amblyopia decreased from 36 to 9%, moderate -- from 42 to 31%, and with weak amblyopia changed from 22 to 26%. Some of the children with extreme and moderate amblyopia passed into the group with weak amblyopia.

All 15 of the children with spasm of accommodation were cured, and visual acuity was improved to 1.0, with three of them showing an improvement in visual acuity from 0.6-0.7 to 1.5. In children with weak and moderate myopia, visual acuity was improved on average by 0.2-0.4, 14 of them showing an improvement in vision without correction to 1.0, while nearly all of them had visual acuity of 1.0 with correction.

The five children with unstable binocular vision became stabilized.

Only three children with extreme amblyopia and pronounced fundic changes showed no appreciable response to treatment, visual acuity improving by only 0.02-0.04.

As we mentioned, there were children enrolled at the camp in 1981 who had been treated for three years or longer. This was the group of patients showing the most stable and rapid positive change. For example, nearsightedness was stabilized in 78% of the cases, and 22% of the children showed increased myopia over a 2-3 year period by only 0.25-0.5 dptr. Children treated for more than 2 years had an improvement in visual acuity by 0.4 on average, most of them reaching a level of 1.0.

Three students with squint treated for three years had their eyes completely straightened, developed stable binocular vision, the visual acuity of each eye reaching 1.0.

Thus, treatment and health-care work at the Young Pioneer camp gives stable high positive results and should be introduced everywhere by agencies and institutions of national education and public health.

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METHODOLOGICAL APPROACH TO ASSESSMENT OF CANCER RISK IN SMALL POPULATIONS

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[Article by R.G. Aliyev, Dagestan Medical Institute, Mahkachkala]

[Text] It is generally aceepted that in most cases malignant tumors occur as the result of environmental factors. However, increasing amounts of data are being accumulated that indicate the ecologic significance of genetic factors also [1, 4, 5, 6, 7] In this connection the formation of groups at high oncologic risk and the prevention of malignant tumors on this basis should be considered while recognizing the relative role of heredity and environmental factors. Three main methods of population genetics are employed to assess them oncologically: clinical-genealogical, clinical-twinning and population statistical methods. However, the possibilities of these methods are limited by the framework of scientific research and are little used in practice, largely because of methodological difficulties. We might also add that the question of the reasons for the broad variations in the incidence of malignant tumors among different ethnic groups and the relative roles of hereditary and environmental factors in this phenomenon remains far from resolved. This is explained by the fact that the question of how marked hereditary predisposition is among individual populations to a given kind of malignant tumor, and the degree of sensitivity or resistance to the effect of exogenous carcinogenic factors, cannot be answered unambiguously. In the genetic sense populations are extremely varied, and within the bounds of national groups up to 85% genetic diversity is observed; while within small, isolated populations this figure reaches 95%. [9]

Because of this the need arises to develop additional, scientifically sound methodological procedures for differential evaluation of oncologic risk in different populations, taking into account the relative roles of hereditary and environmental factors.

As a rule, the individual encounters these factors within a limited space and a limited time. Accordingly, the problem of detecting them becomes more realistic the smaller the population group selected as the unit of observation. Small, isolated populations meet this requirement. Few studies of malignant tumors have been conducted among such populations, and there is virtually no published work on the relative assessment of oncologic risk taking into account the relative roles of hereditary and environmental factors; this is explained by the lack of general methodological principles to conduct such studies. In this article we offer several methodological approaches to the comparative evaluation of oncologic risk in small populations, taking into account the role of genetic and environmental factors.

Materials and Methods

The following small, isolated populations in Dagestan, whose anthropology has been studied elsewhere [2] were chosen as the research model: Avartsy, Dargintsy, Lezghiny, Kumyki, Laktsy, Nogaytsy, Tabasarantsy and Taty. We were also interested in comparing data on other ethnic groups displaying different racial types and family and marriage relations. For this reason, the field of study was switched to Kenya, whose population is made up of more than 40 different tribes. We studied the following tribes: Kikuyu, Kamba, Abalukya, Kisii, Kalenjin and Luo.

Groups were selected taking into account the conditions showing the population genetics with respect to processes in small populations, as follows: a) the relatively small numerical strength of the population; b) slow population growth rate; c) the presence of a large number of marriages between relatives (inbreeding); d)the restriction of marriages within a given population (endogamy). A program adopted by the anthropology department at the USSR Academy of Sciences Institute of Ethnography [2] was used to judge the actual differences between the populations compared; this program includes general information on the population being studied and a series of anthropological measurements and ratings, together with data on dermatoglyphics and blood groups (the ABO, M and MN systems). The coefficient of inbreeding (F) was calculated from the formula of C. Stern. [2] Retrospective analysis was done on material of the incidence of disease covering 9,620 patients [1] registered with the Dagestan Republic Oncological Dispensary (1966-1975), 7,464 African patients, and 784 patients who were immigrants from England and India and recorded in the Nairobi Cancer Register (1971-1976). Collection of ethnographic data, special population studies in individual regions, and the study of migrating groups were done using the expedition method. During the expedition work, 3,795 program cards were completed in Dagestan and 2,583 in Kenya. For analysis of material collected a calculation was made of intensity, age and standardized indices (using an indirect method for relatively small numbers of observations and a direct method when observations were adequate), with assessment of the confidence factor for each population separately. Statistical significance of differences found was determined using the chi-square test and 95% confidence intervals using the method of V.V. Dvoyrin et al. [3] Using the method of the same authors, determinations were made of the minimum numerical strength of a population in which n cases would occur with P-percent confidence, together with standardized indices for relative risk.

To evaluate the relative roles of hereditary and environemntal factors a comparative analysis was made of the incidence of disease and the morphological features of malignant tumors (localization within an organ, histologic type) as follows:

within genotypically inhomogenous populations living in the same environmental conditions; b) within genotypically homogenous subpopulations living in known different environmental conditions; c) among natives and immigrants, and also among migrants and initial populations. In Dagestan, most of the nationalities meet the requirements of the concept of small, isolated populations.

Results

In terms of the coefficient of inbreeding (F) and proportion of endogamy (E), the following are the most isolated: the Avartsy (F = 0.009. E = 93.7%), the Laktsy (F = 0.12, E = 88.4%), the Dargintsy (F = 0.009, E = 92.4%), the Lezghiny (F = 0.03, E = 91.1%), and the Tabasarantsy (F = 0.004, E = 84.3%); the least isolated are the Kumyki (F = 0, E = 89%). Anthropometric, somatometric and biochemical differences between the groups compared [should be] substantial in order to evaluate the effect of the same environmental conditions on the incidence of cancer.

Comparative incidence of lung cancer in three isolated, small populations living in the same conditions in the mountainous zone of Dagestan is shown in Table 1 below.

Table 1. Standardized Indices (Direct Method) for Incidence of Lung Cancer in Three Small Populations of Dagestan (1966-1975)

Ethnic Group	Sex	Absolute Number	Standardized Indices	Confidence Intervals (95%)		Mean Age of Patients
				P -	P +	
Avartsy	M	205	16.2	14.3	18.1	58.3
	F	10	0.5	0.2	0.8	60.1
Dargintsy	M	113	16.5	14.1	18.9	59.7
	F	16	1.3	0.8	1.8	60.4
Laktsy	M	66	25.1	19.8	30.4	49.4
	F	16	3.3	2.0	4.7	50.2

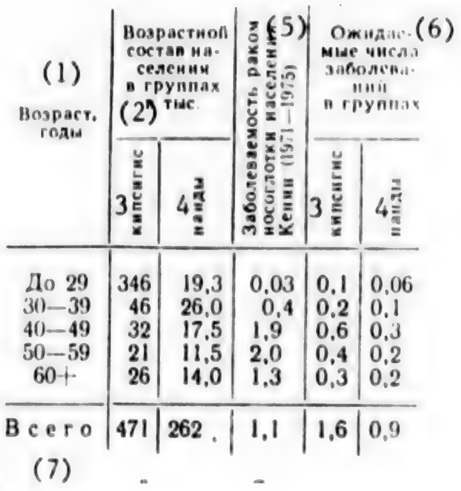
The incidence of lung cancer among the Laktsy is considerably higher than among the Avartsy and Dargintsy. Moreover, relative risk of lung cancer among Laktsy aged up to 39 is 9.6 times greater, while the mean age for the manifestation of tumors is a decade earlier than among the Avartsy and Dargintsy ($P < 0.01$). Taking into account the fact that the compared groups are identical except for their anthropological diversity, it can be suggested that the Laktsy are subjected to an additional effect from some adverse internal factors. If genetically different populations in identical environmental conditions have substantial differences in the incidence of the disease then it can logically be thought that the reasons for these differences are genetically based sensitivity and resistance in the populations to the effect of carcinogenic agents in the environment. And if they have about the same level of incidence, then it can be considered that enviromental factors play a dominant role in determining the incidence of a given tumor.

We propose as another criterion comparison of two or more subpopulations belonging to the same ethnic group but living in known different environmental conditions. This enables assessments to be made of the effect of different environmental conditions on a genetically homogeneous population.

If the levels of incidence in compared subgroups vary substantially, then the reason for these differences can be explained by environmental features. The degree by which one subpopulation is at greater oncologic risk compared with another makes it possible to assess roughly the intensity of the effect of environmental factors. In the event that the incidence in compared groups remains about the same regardless of environmental conditions, then the hereditary factor can be of decisive significance in this phenomenon.

As an example let us consider the incidence of nasopharyngeal cancer in two subpopulations of the Kalenjin tribe, whose family and tribal organization is based on blood relationships and intragroup and intrafamily endogamy, but whose environmental conditions differ (Table 2).

Table 2. Expected Average Annual Number of Cases of Nasopharyngeal Cancer in the Kipsigis and Nandi Groups of the Kalenjin Tribe (Kenya) (1971-1975)



(1) Возраст, годы	(2) Возрастной состав населения в группах, тыс.		(5) Заболеваемость раком носоглотки населения Кении (1971—1975)	(6) Ожидаемые числа заболеваний в группах	
	3 кипсигис	4 нанди		3 кипсигис	4 нанди
До 29	346	19,3	0,03	0,1	0,06
30—39	46	26,0	0,4	0,2	0,1
40—49	32	17,5	1,9	0,6	0,3
50—59	21	11,5	2,0	0,4	0,2
60+	26	14,0	1,3	0,3	0,2
Всего (7)	471	262	1,1	1,6	0,9

Key:

1. Age
2. Age makeup of population in groups, per 1,000
3. Kipsigis
4. Nandi
5. Incidence of nasopharyngeal cancer for population of Kenya (1971-1975)
6. Expected number of cases within groups
7. Totals

Among the Kipsigis group an average of two cases of nasopharyngeal cancer can be expected each year; among the Nandi group one case can be expected. In fact, over a 5-year period 41 cases were recorded among the Kipsigis group, and 19 cases among the Nandi group. Hence, the average annual standardized index $SI_k = 5.5$ (3.9-7.5) and $SI_n = 4.9$ (2.9-7.6), and the 95% confidence intervals (within parentheses) indicate that the incidence of nasopharyngeal cancer is the same in both groups. A statistically significant increase in the indices for the incidence of nasopharyngeal cancer among the Kalenjin population compared with the average "expected" numbers in the zone of their resettlement makes it possible to assign the Kalenjin to the high risk group for nasopharyngeal cancer. A similar comparison of the incidence of certain malignant tumors in populations from the same ethnic group but living in known different environmental conditions shows, for example, a definite predisposition to cancer of the esophagus among Lezghin populations, to stomach cancer among the Taty, to breast cancer among the Kumychky and Russians, and to skin cancer among light-skinned nationalities. From the practical viewpoint, the need to concentrate more intensive and specific preventive examinations primarily among the populations at increased risk of cancer is obvious.

Comparison of indices for the incidence of certain malignant tumors in different ethnic groups that have migrated (15-20 years ago) to new environmental conditions with the indices for incidence among the indigenous inhabitants (natives), and also those for migrants with those for the initial population, makes it possible to detect whether or not the incidence of malignant tumors changes with the change in environmental conditions. For this we calculated separate indices for incidence among indigenous inhabitants, settlers, and the initial population (Table 3).

Table 3. Relative Incidence of Lung Cancer Among Indigenous Inhabitants, Migrants and Their Fellow Inhabitants (1966-1975)

Ethnic Group	Groups Observed	Absolute Number of Patients	SI*	Confidence Intervals 95%	
				P –	P +
Avartsy	Settlers (lowland)	120	18.3	14.2	23.1
	Initial population (mountainous zone)	87	4.1	3.0	5.4
Dargintsy	Settlers (lowland)	50	15.2	10.2	21.6
	Initial population (mountainous zone)	56	7.1	4.9	9.9
Kumyki	Indigenous inhabitants (lowland)	176	21.4	17.5	25.8

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* SI = standardized indices (indirect method)

Avartsy who have resettled from the mountainous zone to the lowlands contract lung cancer five times more often than their fellows in the mountains; and this evidently depends on the greater intensity from the effect of carcinogenic agents in the new environment. Another example of the same kind can be cited with respect to cancer of the mouth, whose incidence, on the contrary, is reduced among migrant Indians settling in Kenya and changing their attitudes toward the use of betel. These examples show the decisive role of environmental factors in changes in the incidence of these malignant tumors in the migrant population.

Differential assessment of the morphologic features of tumors (histologic structure and localization in an organ) in different ethnic groups is the next criterion (Table 4).

The proportion of lesions in different parts of the stomach varies in different populations. Among Russians, cancer of the pyloric antrum is seen considerably more often and cancer of the body of the stomach much less often than among the Avartsy and Dargintsy ($P < 0.01$).

Table 4. Distribution of Patients with Stomach Cancer by Localization of the Tumor Among Three Ethnic Groups in Dagestan (1966-1975)

Ethnic Groups	Pyloric Antrum	Body of Stomach	Cardiac Portion	Total	Chi-square
Russians	132 (76.3)*	25 (25.0)	16 (9.2)	173(100.0)	13.3
Avartsy	66 (60.5)	34 (31.2)	9 (8.2)	109(100.0)	
Dargintsy	60 (59.4)	33 (32.7)	8 (7.9)	101(100.0)	P 0.01
Totals	258 (67.4)	92 (24.0)	33 (8.6)	383(100.)	

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* percentages shown within parentheses

Analysis of the distribution of different histologic types of stomach cancer using the classification of Jarvi et al [8] showed that among Russians the risk of contracting "intestinal" types of stomach cancer (70.6%) is substantially higher than among the Avartsy and Darginsty (56.7%), who are more disposed toward a "diffuse" type of stomach cancer. Evaluation of the incidence of these histologic types of stomach cancer among indigenous inhabitants, migrants, and their "compatriots" showed that Avartsy who have resettled (lowland) contract stomach cancer twice as often as their fellows in the mountainous zone. Here, the risk of disease among migrants increased precisely through the "intestinal" type of stomach cancer, while the risk of contracting the "diffuse" type of stomach cancer was not significantly altered. Similarly, the incidence of squamous cell carcinoma of the lungs among the migrant population increased by a factor of 5 ($P < 0.05$) with relatively stable indices for the incidence of adenocarcinoma and poorly differentiated forms. This makes it possible to suggest that some histologic types of cancer are linked to a greater degree with environmental factors, while others are associated with heredity.

It is possible that the not always statistically reliable link indicates that it is precisely ethnic affiliation and hereditary predisposition that determine the high or low level for the index for incidence in a given population. However, I would like to emphasize that attempts to detect genetically based sensitivity or resistance in populations to the occurrence of malignant tumors and the adoption of measures to reduce the carcinogenic effect of the environment primarily for the population groups most sensitive to the effect of carcinogenic factors in the environment should be an important element of any program aimed at preventing cancer. The proposed methodological approach is most promising in this respect.

BIBLIOGRAPHY

1. Aliyev, R.G. "Ethnic Aspects of Distribution of Cancer in Dagestan." VOPROSY ONKOLOGII No 1, 1980, pp 87-90.

2. Gadzhiyev, A-G, G. "Antropologiya malykh populyatsiy Dagestana" [The Anthropology of the Small Populations in Dagestan], Makhachkala, 1971 pp 7-360

3. Dvoyrin, V.V. "Statisticheskiye metody otsenki pokazateley chastoty pri izuchenii zlokachestvennykh opukholey" [Statistical Methods for Evaluating Indices for Incidence in Studies of Malignant Tumors], Moscow, 1978.

4. Peterson, B.Ye. and Kapatsinskiy, Ye.V. "Pathogenetic Bases of Oncologic Risk." VOPROSY ONKOLOGII No 10, 1979, pp 3-7.

5. Pogosyants, Ye.Ye. "Aspects of Genetics in Tumors in Man." VOPROSY ONKOLOGII No 9, 1978, pp 15-24.

6. Levontin, R. "Genetic Bases of Evolution." Moscow, "Mir" 1978, pp 161-166.

6a. Anderson, D.E. "Familial Susceptibility" in "Persons at High Risk of Cancer." Acad. Press, N.Y., 1975, pp 39-54.

7. Mulvihill, J.J. "Genetic Repertory of Human Neoplasia" in "Genetics of Cancer," Raven Press, N.Y. 1977, pp 137-143.

8. Jarvi, O. and Lauren, P. "On the Role of Heterotopias of the Intestinal Epithelium in the Pathogenesis of Gastric Cancer." ACTA PATHOL. MICROBIOL. SCAND. Vol 29 No v, 1951, pp 26-44.

9. Kheys, D. "Prichinnyy analiz v statisticheskikh issledovaniyakh" [Causal Analysis in Statistical Studies], Moscow, 1981

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METHODOLOGY FOR ANALYZING INFORMATION ON CANCER PATIENTS

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pp 8-13

[Article by V.M. Merabishvili, Scientific Research Institute of Oncology imeni professor N.N. Petrov, USSR Ministry of Health, Leningrad]

[Text] Medical statistics make up part of general state statistics--"a most important tool for state control of the national economy."*

The increased incidence of disease and death from malignant neoplasms requires not only the creation of reliable automated systems for collecting data on cancer patients, but also the further improvement of known methods, and the development of new methods, for analyzing large volumes of material for the purpose of making operational use of information obtained in dealing with cancer. [5]

In analysis of the incidence of and deaths from cancer, methodological methods such as calculating intensive (for the frequency of characteristics) and extensive (for characteristics of structural changes) indices are now widely used. When comparisons are made of data from different territories or within the framework of the same locality but for a specific time period, it is often sufficient to apply indices standardized by age, or the so-called standardized indices, even though the comparison requires the observance of a number of conditions. [1]

For a number of years the use of a whole series of dynamic indices has been available, in particular, the following indices: increment or decrease, rate of growth or decrease, rate of increment or decrease, absolute value for 1% of increment or decrease, and also the clarity coefficient. It should be borne in mind that the values from which a dynamic series is formed can be both absolute and relative, or averaged figures.

It is known that some kinds of definite trends in change, as for example a gradual increase or decrease, are by no means always revealed in a dynamic series. In this case, when a dynamic series consists of variable values and it is difficult to trace a general trend, averaging (or smoothing) of this series is used with the aid of first, second or third order parabolas, and also the simpler smoothing method using a moving average.* In this case, each individual value in a series is replaced by a mean arithmetic value for several values (usually three), and trend assessment is done from the newly compiled series. [1] This method acquires special importance when analyzing data for relatively small territories, or rare localizations; in these cases the random factor increases sharply. As an example of analyzing a dynamic trend, let us take a series of figures for incidence among the population of a specific territory for neoplasms of the lips over a 6-year period (Table 1) [2,4,7]

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* L. Volodarskiy. "Nazrevshiye zadachi gosudarstvennoy statistiki" [Urgent Problems in State Statistics], KOMMUNIST No 17, 1977, pp 90-100

Table 1. Smoothing for a Dynamic Series for the Incidence of Cancer of the Lip over a 6-Year Period (using the moving average method with nominal figures)

Year	Index of Incidence per 100,000 (Pn)	Sum of Three Terms $\left(\sum^{nj-1} p1,2,3\right)$	Moving Average $\left(M^{nj-1}_{1,2,3}\right)$
1975	2.1	-	-
1976	2.6	2.1 + 2.6 + 1.2 = 5.9	1.97
1977	1.2	2.6 + 1.2 + 1.5 = 5.3	1.78
1978	1.5	1.2 + 1.5 + 1.4 = 4.1	1.37
1979	1.4	1.5 + 1.4 + 1.6 = 4.5	1.50
1980	1.6	-	-

In the example given it is really difficult to establish a pattern in the dynamic intensity indices for the incidence of lip cancer since three increases in the values were seen in 1976, 1978 and 1980 and the indices dropped in 1977 and 1979. A series of values compiled from the indices for the moving average clearly shows a general downward trend in the index.

When assessing the effectiveness of steps taken to deal with cancer, a drop in the death rate from malignant neoplasms is regarded as a positive criterion. However, it is essential to make a deeper analysis of this phenomenon since of itself a drop in the level of cancer deaths is by no means always associated with successes in preventive or therapeutic measures, or with changes in the age makeup of a population. Lowered mortality from cancer is possible, first, because of a drop in the number of new cases of the disease, second, by improvement in the detection of patients during the early stages, third, through the use of better treatment methods, and fourth, by failing to make adequate allowance for deaths from malignant neoplasms, and a number of other circumstances. Each of these reasons can itself affect the death rate index and it is necessary to make an assessment of the force of each of them, both individually and in combination.

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*"Statistika" [Statistics], edited by F.G. Dolgushevskiy and L.G. Ozeran, Moscow, "Mysl'", p 89

For analysis of the general dynamic situation for mortality it is also possible to use the two following methods:

First: calculation of dynamic differences in the incidence and mortality indices both for the general index and for the leading localization. For example, during the period 1970-1979, in the USSR an increase was noted, up from 50%ooo to 62.5%ooo, or 25%, while for individual localization the difference in the incidence and mortality index was even greater: for lung cancer 161.5%, stomach cancer 87.5%, and breast cancer 40%. During this period a decrease in the difference between incidence and death was noted for cancer of the neck of the uterus, at 24.5% given a general decreasing trend in mortality and incidence from this cause.[8] In this case we are witnessing an intensive decrease in incidence which is taking place at twice the rate for the drop in mortality.

Second: calculation of a composite index for the relationship between incidence and mortality, which in the case of a satisfactorily presented record for malignant neoplasms should be at least greater than unity (disregarding skin cancers).

It is important to note that the index in statistics is a generalized index for the dynamics of the kinds of aggregates whose elements cannot be added. The commensuration elements for the index are determined on the basis of statistical analysis of the essence of the phenomenon being studied.[9]

The composite index is especially valuable in calculations for individual localizations. The index for the relationship between incidence and mortality equals the sum of the indices for incidence for individual localizations:

$$I_{pq} = \frac{\Sigma P_{1q1}}{\Sigma P_{2qo}}$$

where P_1 is the incidence index, P_2 the mortality index, and qo,1 = 1. This index is particuarly valuable in calculations of individual localizations (the individual index).

When comparing calculations of (Ipq) for different territories it is better to use not "rough" intensity indices but indices standardized for age.

Calculation of the composite index for the USSR for the Seventies shows incidence of cancer is higher than mortality, and a progressive trend toward an increase in this index is noted. Calculation of the composite index is, on the one hand, a survey of the status of malignant neoplasms registered in an individual locality or country, and on the other hand, it characterizes the severity of the disease, as seen especially graphically in analysis of the indices for individual localizations.

One considerable achievement in the struggle against malignant neoplasms is the gradual increase in the contingents of patients with malignant neoplasms. The buildup in these contingents is taking place mainly in connection with improvements in methods for treating cancer patients; however, no methodological procedures exist for assessing this phenomenon. The method proposed here for a "rough" index of the buildup of these contingents (I_{cb}^{app}) is not complicated and, what is most important, is sufficiently objective:

$$I_{cb}^{app} = \frac{\Sigma K \cdot q_1}{\Sigma N \cdot q_2}$$

where K is the numerical strength of the contingents and N the number of first-time patients. The value for this index for skin cancers is 9; for breast cancer it is 5, while for cancer of the rectum the value is only double for the contingents compared with first-time patients. Comparison of I_{cb} for individual territories for individual localizations is also an indirect criterion of the adequacy of the treatment methods being used. I_{cb} is in the category of complex indices since it is compiled from inhomogeneous statistical aggregates. Its value is not associated with the features of the age-and-sex makeup of patients, and because of this it is possible to compare it for different territories. A relatively low value for I_{cb} can be associated with the severity of the disease (if we look at its value for individual localizations as, for example, cancer of the esophagus or the pancreas, its value is less than unity), and also with unsatisfactory organization of outpatient observation of patients.

At the same time the value for I_{cb} lies not so much in comparison of its values for different territories as in evaluating the index dynamically within the confines of specific territories.

In order to establish greater objectivity from a comparison of the I_{cb} indices in the specific case of individual union republics, we have proposed a method for calculating a complex (aggregate) I_{cb} (I_{cb}^{A}), which takes into account the specific makeup of the contingent of cancer patients in a republic.

Table 2. A Scheme for Calculating the Aggregate Index for the Buildup of Contingents of Cancer Patients

Localization	Proportion of of localizations (in contingents)	Standard (shortened)	I_{cb}^{app}	a x b	$I_{cb}^{A} = \frac{\Sigma(a \times b)}{\Sigma a}$
		a	b		
Lips	2.7	3	13.4	40.2	
Esophagus	3.2	3	0.9	2.7	
Stomach	18.6	19	1.6	30.4	
Rectum	3.8	4	2.5	10.0	
Larynx	1.9	2	4.2	8.4	
Lung	14.2	15	1.0	15.0	
Neck of uterus	5.7	6	11.1	66.6	
Breast	7.2	7	5.8	40.6	
Skin	11.4	11	9.8	107.8	
Lymph and hematopoietic tissue	4.4	5	2.6	13.0	
Total	$\Sigma = 73.1$	$\Sigma a = 75$	$I_{cb}^{app} = 4.1$	$\Sigma(a \times b) = 334.7$	$I_{cb}^{A} = 4.5$

Calculation of the aggregate index for contingent buildup is done in several stages.

The first stage is to compute the rough index for contingent buildup.

The second stage is to calculate special (for individual localizations) indices for contingent buildup $I_{cb} = \frac{q^{1,2,3...n}}{q_1^{1,2,3...n}}$

The third stage is to select the standard. As our standard we selected the distribution of contingents of cancer patients for the entire USSR for the main localizations. By rounding the proportions obtained, we achieved a standard distribution for contingents of cancer patients for the whole of the USSR, acceptable for the calculations (without a group for other contingents).

The fourth stage is weighting (multiplying) the proportions by the values for special I_{cb} (a x b).

The fifth stage is to obtain values for the aggregate I_{cb} by means of adding the values obtained in the fourth stage, and applying them to the total number of proportions for standard distribution of contingents, in our case, 75% (since we did not include in the calculation a group for other localizations).

The sixth and last stage is to calculate the clarity index.

Table 2 shows a scheme for the sequence in computing the aggregate index for the buildup of contingents of cancer patients for the entire population of the USSR (the calculation is done for the main localizations). Calculation of the index for individual territories is done similarly. The results of such a calculation are shown in Table 3, where clarity indices are also shown. Use of the aggregate index I^{A}_{cb} has shown, in particular, that in the RSFSR the value for this index is somewhat higher than the average all-union level, while calculation of the rough index I^{app}_{cb} did not establish this difference. The favorable (above the all-union average) rough index I^{app}_{cb} for the Moldavian SSR is associated with the less severe structure in the incidence of cancer in this republic, while the lowest rough index I^{app}_{cb} for the Turkmen SSR (2.2) is determined largely by the large proportion of esophageal cancer, even though elimination of the predominant effect of this cause of cancer does not raise it to the all-union average.

And finally, attention should be drawn to the impermissibility of comparing the incidence of cancer and mortality from nonrepresentative data, which, unfortunately, is still encountered in work published in recent years. Malignant neoplasms are a relatively rare phenomenon, and in order to obtain reliable characteristics for incidence, it is necessary to apply special methods [3] that determine the minimum numbers of the population for whom it is possible to calculate intensive indices and subsequently compare them. In individual cases, in order to achieve reliable data the range of observations

Table 3. Indices for Buildup of Contingents of Cancer Patients (1979)

	→> 1	→> 1	Clarity Index (percent)	
Republic	I_{cb}^{app}	I_{cb}^{A}	I_{cb}^{app}	I_{cb}^{A}
USSR	4.1	4,5	100	100
RSFSR	4.1	4.6	100	102
Ukrainian SSR	4.4	4.6	107	102
Belorussian SSR	3.9	4.2	95	93
Uzbek SSR	2.8	3.2	68	71
Kazakh SSR	3.2	3.8	78	84
Georgian SSR	3.8	3.6	93	80
Azerbaijan SSR	2.7	3.3	66	73
Lithuanian SSR	3.9	4.3	95	96
Moldavian SSR	4.4	4.1	107	91
Latvian SSR	5.1	5.6	124	124
Kirghiz SSR	3.8	4.0	93	89
Tajik SSR	3.5	3.5	85	78
Armenian SSR	3.2	3.4	78	76
Turkmen SSR	2.2	3.2	54	71
Estonian SSR	4.6	5.0	112	111

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is increased, that is, the number of phenomena are added over a number of years, corresponding to growth, and the numerical strength of the population is the medium from which the indices are calculated. In general, a fully appropriate method should be limited by the period used to average the index. It is scarcely advisable to calculate an average for more than a 3- to 5-year period. Further increase in the time factor weakens the reliability of the index because of the growing effect of the difference between the initial and subsequent periods of sanitation-demographic, ecologic and other factors. Actually this kind of average is not an aggregate measure of the phenomenon studied and even less is it acceptable for comparing a series of such averages calculated for a prolonged period for different localities.

BIBLIOGRAPHY

1. Belitskaya, Ye.Ya. "Uchebnoye posobiye po meditsinskoy statistike" [A Training Manual for Medical Statistics], Leningrad, 1982.

2. VESTNIK STATISTIKI No 11, 1976 pp 87-88.

3. Dvoyrin, V.V. "Methodology for Determining the Required Numerical Strength of a Population in Studies of the Distribution of Malignant Neoplasms," SOVETSKOYE ZDRAVOOKHRANENIYE No 4, 1978 pp 36-39.

4. Serenko, A.F. and Tserkovnyy, G.F. (editors), "Zlokachestvennyye novoobrazovaniya" [Malignant Neoplasms], Moscow, 1974.

5. Merabishvili, V.M., Napalkov, N.P. and Tserkovnyy, G.F. "Status of and Prospects for the Development of Cancer Statistics in the USSR." VOPROSY ONKOLOGII No 6, 1978, pp 38-44.

6. Merkov, A.M. and Polyakov, L.Ye. "Sanitarnaya statistika" [Sanitation Statistics], Moscow, 1974.

7. Napalkov, N.P., Tserkovnyy, G.F., Merabishvili, V.M. et al. "Distribution of Malignant Neoplasms and the Organization of Medical Care for Cancer Patients in the USSR in 1974." VOPROSY ONKOLOGII No 2, 1977, pp 3-24.

8. Napalkov, N.P., Merabishvili, V.M., Tserkovnyy, G.F. et al. "Malignant Neoplasms in the USSR in 1979 (an Analysis of Main Indices)." VOPROSY ONKOLOGII, No 11, 1981, pp 3-27.

9. Suslov, I.P. "Teoriya statisticheskikh pokazateley" [Theory of Statistical Indices], Moscow, 1975.

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PUBLIC HEALTH IS SOCIAL TASK

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[Interview with I. Platukis, Lithuanian minister of health, by B. Bartusyavichyute; data and place not specified]

[Text] [Question] Concern for people's health is one of the most important social tasks. What are the achievements and future prospects in this sphere in our republic?

[Answer] Fulfilling the instructions of the party and government on further improving public health, our republic was one of the three union republics to fulfill the capital construction plan for medical establishments for all indicators during the 10th Five-Year Plan. Thanks to the commissioning of new projects, each year the average number of hospital beds increased by 1,000 and patient throughput at polyclinics increased by 2,000 per shift. Construction rates are not being reduced.

During the current five-year plan it is planned to open hospitals with a total of 4,170 beds and new polyclinics able to handle a patient throughput of 12,800 per shift. Last year polyclinics were built for the Republic Clinical Hospital in Vilnius and the rayon hospitals in Tel'shyay and Kedaynyay. In 1982 construction of the second stage of the Vilnius Republic Clinical Hospital, extensions to the clinical hospital in the neuropathology department of the Kaunas Medical Institute, the premises for the city infectious disease hospitals in Klaypeda and Panevezhis and the Vilnius polyclinic on the Antakal'nise and other projects was completed. Present availability of hospital facilities is 121 beds per 10,000.

The Kaunas Cardiology Center is well known both in our republic and throughout the country, and also abroad. After a course of treatment about 90 percent of people suffering from heart disease are able to return to their usual employment. Positive shifts have taken place in the heart surgery centers. The first artery reconstruction surgery was done in Vilnius in 1963, and the first open-heart surgery in 1964. By now more than 4,000 heart operations and about 6,000 operations to reconstruct blood vessels have been carried out. Artificial heart valves are implanted, congenital heart defects are corrected surgically, and heart rhythms are restored. These achievements by the republic's physicians have been evaluated positively both in our country and abroad.

Much has been for human health at the transplantation center. The first kidney graft was done in the republic in 1973. Now about 50 such operations are performed each year. Microsurgery is being developed. For example, detached fingers can now be restored. An intensive care system has been developed and introduced for mothers and babies with so-called risk factors.

[Question] The CPSU Central Committee and USSR Council of Ministers decree "On Additional Measures to Improve the Protection of Public Health" deals with important problems. What is planned to improve the prevention of disease in the republic?

[Answer] Unfortunately, we still meet people, including medical people, who attach more significance to the cure than to prevention. Accordingly, the level of prophylactic work is sometimes unsatisfactory and the public underestimates it. Meanwhile the WHO asserts that death from cardiovascular diseases and cancer could be halved if people maintained prophylactic norms of which they are usually quite well aware. They say that smoking and drunkenness are forms of slow suicide. This is widely known, but the numbers of inveterate smokers and people who abuse alcohol are not dropping. Here the labor collectives and public organizations should come to the aid of the medical profession.

A broad program of preventive measures covering the entire population is being drawn up. Up to now people's health has been checked, for example, in connection with harmful working conditions. But now there will be a total check, making it possible to detect indidivual predisposition to diseases. The population will be divided into three groups. The first group is made up of healthy individuals who should simply maintain a normal way of life, engage in sports, eat a correct diet and so forth. The second group will include healthy individuals in whom a risk factor has been found, that is, excess body weight, a sedentary way of life, harmful habits. Such people are threatened by diseases of the cardiovascular system. Physicians will invite them for consultations. They will receive practical advice. The third group will comprise patients who need immediate care, either drug therapy or surgery. They will be hospitalized.

The health of children in creches and kindergartens has been constantly monitored but attention has been focused mainly the most widespread diseases such as impaired vision, spinal curvatures and so forth. Insufficient attention has been paid to diseases in the parents and predisposition to particular disease. Now genetics is coming to the aid of the medical profession; the Vilnius Clinical Hospital has become the base for this.

[Question] What is being done to provide timely and qualified medical care for the rural population?

[Answer] During the last 5 years a start has been made on the construction of new, up-to-date outpatient clinics. Our republic has acted as the bellwether in this matter. During the 10th Five-Year Plan about 30 rural outpatient clinics were built, and during the present five-year plan it is intended to commission about another 50.

The rural outpatient clincis are staffed by therapists, pediatricians and stomatologists, and the larger ones also have gynecologists. They are equipped with patient reception departments, procedure rooms and laboratories. They serve an area within a radius of about 10 kilometers. The outpatient clinics have their own ambulances, which is very important for improving patient services.

The Dotnuva outpatient clinic in Kedaynayay rayon, the Zhezhmaryay clinic in Kayshyadoris rayon and a number of others are praised for their good work. They comprise a new wing of primary health care, these unique health centers in the countryside. With the aid of the rural outpatient clinics the rural population has gained access to highly qualified medical care without having to go through intermediaries. As a result, fewer people have to visit the polyclinic at the rayon central hospital since the medical care they need is available close to home. Opportunities have been considerably improved for outpatient treatment and dental care. The medical staffs at the rural outpatient clinics carry out preventive work according to the plan and make house calls.

In accordance with the new CPSU Central Committee and USSR Council of Ministers decree, incentive funds are being created from the assets of sovkhozes and other agricultural organizations, and this is making it possible to improve everyday conditions for rural physicians. It is essential to try to get these organizations to provide regular bonuses for medical workers. Creation of these funds has also been permitted in the cities.

The rural outpatient clinics are subdivisions of the rayon central hospitals. The rhythm and style of their work is linked directly with the activity of the rayon polyclinic. Thus, the quality of medical care and the standard of services in the lower wings--the rural outpatient clinics--depend on the level of organizational work and exactingness of polyclinic staffs. Accordingly, much attention is now being given to the work of the polyclinic and to raising the level of this work. Each year an average of 34 million visits are made to the polyclinics and outpatient clinics.

[Question] The ranks of the medical profession are constantly swelling. Unfortunately, however, the authority of the physician has never been as it should be. The waiting lines at the physicians' consulting rooms, the indifference of medical personnel, the diagnosis that is not quite accurate... What must be done to raise the qualifications of physicians and improve political-educational work among the medical profession?

[Answer] Yes, there are increasing numbers of physicians. Each year about 600 physicians and approximately 1,600 middle-echelon medical personnel receive their diplomas. The republic's population now receives medical care from 14,000 physicians and 38,000 middle-echelon medical personnel. There are 40 physicians and 110.9 middle-echelon medical personnel per 10,000 of the population. This is indeed a substantial force. And most of the medical profession works selflessly, showing loyalty to the oath of the physician of the Soviet Union.

Complaints and letters about shortcomings in the work of the medical staffs are sent to the medical establishments. There are various kinds of complaints;

some are justified, others not always. Detailed analysis shows that dissatisfaction arises most often because of the inattentive attitude of the physician and lack of feeling, and sometimes downright dishonesty.

We are now trying to make it possible for the public to attend the polyclinics and outpatient clinics in their free time and on days off. Much is being done to reduce the lines at physicians' consulting rooms and the duration of patient throughput time is being examined. We also think that there should be fewer "empty" Sundays and Saturdays so that as many medical personnel as possible can work on these days; we are setting up a variable roster for this.

[Our conversation was frequently interrupted by telephone calls. The minister gave advice, promised help, explained.... I asked (I had not planned to):]

[Question] Is it difficult to be a minister?

[Answer] The same as for any other official. But we must answer the telephone. We can't get by without contacts with people.

Much concern is being shown to improve the qualifications of members of the medical profession and their political-ideological maturity. The system by which qualification categories are decided is now under review. Certification is mandatory for all physicians. This will be an important stimulus for improving their erudition and professional skills. Does the physician maintain contact with the patients? The certification board will be helped in deciding this question by the administration of the medical establishment and the public organizations. I think that this kind of approach to the work of medical personnel will help to clarify their capabilities and qualifications.

It is the duty of the primary party organizations and communists to educate their colleagues in the spirit of respect for their profession. Each individual should understand that he is working for the good of society and that his work is a measure of his sense of civic duty and ideological maturity.

Communist attitudes toward the matter in hand are revealed by socialist competition between medical, prophylactic and pharmaceutical establishments. Here, an important place is assigned to instilling communist attitudes in medical personnel toward their own work, and to the mentor movement. Party organizations should work in the future to improve the quality of medical care and reduce the incidence of disease. Each person should feel the physician's desire to help him to the speediest possible recovery.

[Question] People talk much about drugs and their distribution. Many people try to obtain those that they already know from their own experience, what in their opinion are the "best" drugs. What is your adivce about this?

[Answer] This is an acute problem. But sometimes talk about drug shortages in unjustified. Sometimes the patient finds information about a particular drug in the medical literature and demands it from his physician even though that drug might still be in the research stage and not available for clinical use. Moreover, of course, the republic's pharmacists cannot stock every drug used in various countries throughout the world. There is no need to. About 120,000 different designated drugs now exist in the world, and the number is growing. Many of them are analogues, that is, they are the same drugs under different names.

WHO experts studying drugs problems point out that such a large number of drugs is a negative phenomenon. First, physicians are unable to know the mechanism of every one of them; second, many drugs are not very effective. The opinion is voiced that several hundred highly effective drugs would be quite adequate. But they must be selected carefully. This kind of rational selection is made difficult because, unfortunately, at this time simply no effective agents exist for the treatment of individual diseases. We must be satisfied with what there are.

The republic pharmaceutical establishments have at their disposal about 3,000 designated drugs. It must be recognized that sometimes there are shortages.

The order for drugs is made as a result of analysis of the situation in the republic. But supplies of drugs from abroad are sometimes irregular. However, there is almost certain to be an analogue available. Physicians and pharmacists are trying to provide all the drugs required.

The production of drugs is constantly growing. And in the future it is intended to increase exchanges of drugs with the CEMA countries; and a large number of drugs will be acquired from other foreign countries.

[Question] To conclude our interview, could we hear your ideas about the sine qua non of health--human hygiene?

[Answer] Hygiene is a promising sphere in medicine. I think that in the future, after the creation of optimum ecologic conditions, most diseases that today are considered serious will be eradicated, as has happened with many formerly serious infectious diseases. However, more attention must be paid to improving public sanitation standards, and proper concern must be shown for the requirements of public health and environmental protection, and the corresponding laws must be observed. Unfortunately, even though the Law on Public Health has now been in force for some time, its provisions are by no means all being observed. Some people think that the law affects only physicians, and not everyone. This is incorrect.

The significance of social hygiene is growing constantly. It is playing a major role in improving our way of life, switching the country's national economy onto the rails of intensive development, and raising general standards to a higher level. All forms of social hygiene are important: children and teenagers, communal, labor and personal. The scientifically substantiated measures and rules of hygiene help to avoid diseases and create favorable conditions for human development and improvement, and they prolong life. When speaking of the situation with seriously ill patients and old people, it is essential to emphasize that more homes for invalids, the old, and various other categories are required. Unfortunately, such establishments still do not enjoy the prestige that they should; this is because of the poor way that work is organized. Sometimes the seriously ill and invalids who require special care occupy hospital beds for long periods. Because of increased life expectancy this problem is becoming increasingly urgent. It awaits a positive decision, with, naturally, help from the appropriate administrations.

The amount of work done by the sanitation service is growing increasingly. Its aim is to safeguard the health of the workers. In order to strengthen their health we, the physicians, must recognize the high obligations of our calling.

[Question[Thank you for the interview.

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PUBLIC HEALTH CARE IN THE RUSSIAN FEDERATION (SIXTIETH ANNIVERSARY OF THE USSR)

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 11, Nov 82 (manuscript received 9 Jun 82) pp 3-8

[Article by M. T. Trubilin, RSFSR first deputy minister of health]

[Text] The 26th CPSU Congress developed grand plans for economic and social development of our country. The decrees that were recently approved, "Measures for Further Improvement of Public Health Care," "Measures for Intensification of State Assistance to Families With Children," "Measures for Further Improvement of Social Security," the USSR Food Program, decrees of the CPSU Central Committee and USSR Council of Ministers dealing with measures to further improve welfare, culture, medical and everyday [utilities, amenities] services to rural inhabitants confirm the concern of the Party and State about improving the life of the Soviet people.

The large and important tasks put to public health agencies and institutions of the Russian Federation require further improvement of work, implementation of a set of measures to improve the health status of the public, lower morbidity, disability and mortality.

It must be noted that the current achievements of public health care are the result of its development in the course of the entire historical period of the Soviet State. From the very first days of its existence, it set the task of providing all of the people with accessible, free and qualified medical care, along with the most important tasks of developing the country's national economy.

A unified system of organizing medical care for the public had to be developed, the means of development of therapeutic-preventive and sanatorium-hygienic institutions had to be defined. Two main directions emerged: organization of multispecialty polyclinic and hospital institutions providing services on the territorial principle (the entire population) and the industrial principle (for industrial workers); organization of specialized dispensaries, in which there was also development of hospital departments, in addition to outpatient ones.

From the first days of Soviet power, one of the main objectives of Soviet public health care was to continuously upgrade organization of extramural medical care of the public and improve its quality. And this is not by chance, since about

80% of all those who seek medical attention begin and end their treatment at polyclinics. For this reason, general [multidiscipline, multispecialty] polyclinics, which render medical services to at least 40,000-50,000 people are being constantly enlarged and new ones constructed.

At the present time, 60% of the outpatient-polyclinic institutions are located in standard [prototype] buildings, that are well-supplied with modern equipment and apparatus; 98% of them have modern clinical diagnostic laboratories, 65% have electrocardiography rooms, 36% have physiotherapy departments and rooms. Departments of reconstructive therapy and rehabilitation are becoming increasingly widespread. Special attention is being given to subdividing territorial therapeutic and pediatric districts and providing physicians for them. In the last 10 years alone, the number of territorial districts increased by 33.8%. The indicator of outpatient care on the district level rose from 82.5% (in 1971) to 85.2% (in 1981). One of the main tasks put to polyclinic institutions is to further improve the quality of diagnostic and therapeutic work.

It is necessary to find better forms of interaction between polyclinics and hospitals. Diagnostic work and therapy in a polyclinic should be set up in such a way as to be able to start patient treatment at a hospital on the very first day of admission, rather than submit a patient to a second examination, as is sometimes done at the present time.

Emergency medical care occupies a large place in the system of extramural care for the public. In the last decades there have been some fundamental changes in organization of this form of care. The integration of ambulance and emergency care has improved the quality of this service. This has been aided by development of a new type of institution, emergency medical hospital. At the present time, thre are 48 such hospitals in RSFSR. More than 900 specialized emergency brigades have been organized--cardiological, traumatological, pediatric, resuscitation, etc. This has had an appreciable effect on the outcome of diseases and mortality rate, particularly with regard to such diseases as myocardial infarction, acute poisoning and severe trauma. Mortality due to myocardial infarction has dropped by 1.2-1.5 times and due to acute poisoning by 2 times.

However, in spite of the measures that are being implemented, the work of the emergency medical service does not yet fully meet modern demands. There is still much to be done to further improve it.

In the 60 years of Soviet power, hospital bed resources have increased to 1,800,000 beds. At the present time, there are 132 beds per 10,000 population. There has been a significant increase in accommodations in departments of cardiology, rheumatology, endocrinology, gastroenterology, neurosurgery, traumatology, etc. The modern achievements of medical science and technology are used extensively at hospitals. The qualitative indicators of their work are improving consistently. Organization of centers for specialized medical care at general hospitals has made it possible to make wiser use of the bed resources, medical personnel and medical equipment, as well as to make more effective use of modern methods and agents for prevention, diagnosis and treatment of patients.

The basic principle of public health care has been followed from the very first days of Soviet power: priority is given to workers producing physical assets with regard to medical care. Since 1945, medical sections began to be organized in industrial enterprises. At the present time there are 887 such sections, with a total of 144,000 beds. Many medical sections in industrial centers of the Russian Federation are notable for highly qualified care. Medical care of workers is provided mainly by the shop principle. In the last 10 years alone, the number of shop districts has grown by 34%. The number of workers per shop district does not exceed the established standards in most sectors of industry.

At the same time, it should be noted that the knowhow of the medical section at the Chelyabinsk Metallurgical Plant in organizing medical-engineering brigades is being adopted slowly. Yet they offer very much; they make it possible to draw more broadly on engineering and technical personnel, health inspectors [physicians] and other specialists to participate in qualified solutions of problems of lowering morbidity and traumatism among workers, as well as disability. There should also be broader dissemination of the knowhow at the Gorkiy Motor Vehicle Plant, where joint work of management, the trade-union organization and medical section on industrial rehabilitation has been set up well.

Soviet public health is confronted with the task of even broader coverage of the public with dispensary services. At the present time, there are 202 people per 1000 urban population under dispensary care in the RSFSR.

Much attention is given to stomatological specialized medical care. In the postwar years, there has been broad development of a network of independent stomatological polyclinics and large stomatological departments. At the present time, there are in the Russian Federation 743 stomatological polyclinics and more than 15,000 departments and offices manned by more than 54,000 specialists, 53% of whom are stomatologists.

The 12th All-Russian Congress of Soviets was of great political significance to construction of Soviet public health. It noted the achievements in rendering medical care to the urban population and the lag in rural medicine. In 1925, the RSFSR Council of People's Commissars adopted the decree "On Providing Rural Population With Medical Care and Improving the Material and Living Conditions of District Medical Personnel." Since that time a long road has been traveled, and rural health care underwent intensive development.

In the last 10 years, 397 million rubles were allocated for construction of rural public health institutions, rural hospitals totaling 55,000 beds and outpatient-polyclinic institutions with a capacity of 70,000 visits per shift have been constructed. At the present time, there are 69 republic level, kray and oblast hospitals, more than 2000 central and rayon hospitals, 4640 district hospitals and 1300 medical walk-in facilities render therapeutic and preventive services to agricultural workers. At the same time, kolkhoz and sovkhoz workers receive specialized medical care in urban public health institutions.

In the years of the 10th Five-Year Plan, 34,000 physicians have been assigned to institutions that service rural workers, more than 13,000 of whom were sent to the Nonchernozem Zone.

In the years of the last two five-year plans, attention was focused mainly on development and strengthening of central rayon hospitals. Under the 9th

Five-Year Plan, such facilities with a capacity of 28,800 beds were started up and under the 10th, 41,500 beds. The mean size of these hospitals increased from 186 beds (in 1970) to 268 at the present time.

During the years of the 10th Five-Year Plan, the number of emergency stations and departments in rural areas increased by 33.9% and the number of responses by 46.6%.

Mobile walk-in medical offices and visiting medical [physicians] brigades have been organized at many central and oblast institutions. Thanks to their regular trips, they help bring specialized medical care closer to rural workers, improve dispensary supervision and concretely solve problems of lowering morbidity.

Under the 11th Five-Year Plan, it is planned to build oblast hospitals and attached buildings in rural areas with 18,000 beds, central rayon hospitals with 43,000 beds, 950 walk-in medical offices and 2000 feldsher-midwife centers. More than 30,000 physicians, a large quantity of medical equipment and ambulances will be sent there. It is planned to remodel and redecorate one-third of all rural therapeutic and preventive institutions within 3.5 years.

Development of an orderly system of child health care is one of the bright pages in Soviet public health. Before Soviet power was established, there was no state system of pediatric [or infant] health care in the country, or a network of therapeutic and preventive institutions, or special training of personnel in this field. From the very first days of its existence, the Soviet government took on the concern about mother and child health care. It defined the basic principles, directions and routes of development of child health care. At the present time, in our country there is an orderly state system of mother and child health care. In the last 10 years, the RSFSR Council of Ministers adopted three special decrees pertaining to health care for infants, mothers and school children.

There are almost 30,000 gynecologist-obstetricians employed in the system of the RSFSR Ministry of Health. There are 5500 women's consultation offices, 325 maternity homes with 227,000 beds for rendering highly qualified services to women. There are 60,000 pediatricians standing guard over the health of children.

Pediatric polyclinics, the number of which presently exceeds 6000, have become centers for rearing healthy children. The number of children's hospitals is also growing. At present there are over 550 such hospitals with 286,000 beds.

The forms of preventive and therapeutic care of infants and mothers are constantly being enriched and refined, and scientific achievements are being introduced extensively in the practical work of institutions.

The RSFSR Ministry of Health, together with scientific teams, developed a draft of a complex interagency program, "Mother and Infant Care" up to 1985-1990, which contains distinct recommendations for further improvement of mother and child health care.

By decree of the RSFSR Council of People's Commissars in 1922, sanitation agencies were organized, their duties defined in the area of protection of water, air, soil, housing, working conditions, foodstuffs, organization of measures to control social diseases, as well as sanitary education of the public. At the present time state sanitary [health] inspections in the RSFSR are implemented by 2477 sanitary-and-epidemiological stations. At the present time, there are 26,969 physicians and 95,301 paramedical personnel employed at sanitary and epidemiological institutions.

The RSFSR Ministry of Health is constantly examining questions of industrial protection, sanitary and everyday services and prevention of occupational morbidity. Occupational morbidity is declining constantly, and it dropped by 14.6% under the 10th Five-Year Plan years. There are 12% fewer cases of serious occupational diseases of respiratory organs leading to disability and 25.6% fewer cases of vibration sickness.

A number of particularly dangerous infections have been eradicated as a result of the system of sanitary-hygienic, therapeutic-preventive and epidemic-control measures implemented in the RSFSR. At the present time, only isolated cases of typhus, brucellosis, tularemia and diphtheria are recorded. There has been a drastic reduction in incidence of typhoid fever, leptospirosis and pertussis. Mortality due to infectious diseases has dropped by a factor of 10.

Under the 11th Five-Year Plan, work on environmental protection, improvement of cities and rural populated centers, working and living conditions will be activated. These tasks will have to be performed in a combined manner, with active involvement of all concerned ministries, agencies and public organizations. It is imperative to upgrade the forms and methods of work, search for reserves, use of which would permit fuller and more effective prevention of overall, occupational and infectious morbidity and, consequently, lead to an additional number of workers in productive labor.

In the 60 years of existence of the Soviet State, the scientific potential of this republic has grown considerably. At the present time, there are 41 medical and 77 scientific research institutes operating in the Russian Federation. The distinctive features of the institutes is that they do not limit themselves to working on scientific problems, but pursue joint work with public health institutions to prevent morbidity, develop new, improved methods of diagnosis, treatment, and to train qualified personnel.

RSFSR scientists are conducting fruitful scientific research. During the years of the 10th Five-Year Plan alone, three major investigations of scientists at the Moscow Scientific Research Institute of Oncology imeni P. A. Gertzen, Voronezh Medical Institute and Second Moscow Medical Institute imeni N. I. Pirogov were recognized as discoveries. Several medical scientists have been awarded the Lenin and State Prizes and more than 300 scientists received the honorary title of Honored Scientist of RSFSR for outstanding contributions to development of medical science and public health care.

On the basis of completed scientific research alone, institutes and VUZ's have submitted 1787 proposals for introduction, including 1361 for public health, more than 130 for different sectors of the national economy and 297 for future scientific research.

The RSFSR Ministry of Health has developed a system for planning scientific projects which is functioning well: it has prepared and approved the "Basic Directions of Development of Medical Science in the Period of 1981-1985," as well as a plan for development and reorganization of scientific institutions of RSFSR in 1981-1985 and up to 1990. Under the 10th Five-Year Plan, the RSFSR Ministry of Health devoted much attention to questions of upgrading management of public health care and the quality of medical care, as well as effectiveness of scientific research on the basis of using ASU [automated control systems] and computer technology. In 1980, work was completed on the first sections of the ASU for the RSFSR Ministry of Health, "Oblzdrav" [oblast health care] ASU, "Gorzdrav" [municipal health care] ASU and "Statsionar" [hospital] ASU. Introduction of systems such as control of specialized services in Kemerovo Oblast and polyclinic service in Izhevsk, telediagnosis of emergency states in Maritime Kray has demonstrated their high social and medical efficacy. A network of information-computer centers (IVTs) and ASU departments has been created to operate ASU of different levels. At the present time, there are 16 IVTs and 13 ASU departments at oblast (kray) hospitals.

From the earliest days of Soviet power, the pharmaceutical service began to be reorganized. In 1922, there were only about 300 pharmacies in RSFSR. They did not exist in all uyezds [prerevolutionary territorial subdivision]. The pharmacies had a limited assortment of drugs, and their primitive furnishings did not enable them to prepare drugs with adherence to sanitary standards. This serious situation required serious organizational steps. The new economic policy proposed by V. I. Lenin in 1922 made a radical breakthrough in the operation of the pharmaceutical service. That year, the entire pharmaceutical business changed to a cost-accounting basis, with the exception of hospital pharmacies. At the present time, there are more than 13,000 pharmacies and 45,000 pharmaceutical centers, 75 enterprises for the overhaul of medical equipment. Most of these institutions are located in standard, well-equipped buildings supplied with modern equipment, small-scale mechanization is used there extensively, scientific organization of labor is being adopted, and progressive forms of servicing the public are used. In the last 20 years alone, drug resources increased by almost 5 times and volume of medical equipment sales has increased by 10 times. The quantitative and qualitative indicators of services to the public have improved.

Since 1943, the Soviet government has repeatedly revised the conditions for providing drugs to patients of different categories. At the present time, disabled veterans of the Great Patriotic War, infants up to 1 year old, residents of the North and patients suffering from diseases referable to 18 categories receive free drugs. Special ["personal"] retirees and members of their families are provided with medication on preferential terms.

It must be borne in mind that the measures along the lines of public health care directed toward safeguarding and strengthening the health of the public have an effect on the nature and dynamics of demographic processes and, conversely, the different changes in demographic processes that have occurred in the last decades, as well as changes in social, industrial and occupational structure of the population have a strong influence on many indicators characterizing the state and dynamics of public health. For this reason, it is important today to conduct combined research including demographic and medical aspects of solving pressing problems of human population.

One should divide into two parts the tasks dealing with upgrading public health indicators and the demographic situation. In the first place, it must be determined which health indicators and demographic processes can be directly affected by public health agencies and institutions; in the second place, it must be elicited which of them do not have a direct bearing on public health care activities.

The decree adopted by the CPSU Central Committee concerning the 60th anniversary of the formation of the USSR calls upon Party, soviet, trade-union, Komsomol organizations, economic agencies to direct their activities toward further expansion of political and work activity of the masses, toward successful implementation of the decisions of the 26th CPSU Congress.

Attention should concentrate mainly on questions of intensification of the economy, improving effectiveness of production and quality of work, and achieving high ultimate results at the least expense.

Preparation for the anniversary of the USSR is instrumental in further improvement of ideological-political and international education of the working people.

As they celebrate with new work achievements the 60th anniversary of the formation of the USSR, the medical workers of the RSFSR will do everything that is in their power "... so that Soviet man will be able to receive prompt qualified and sympathetic [compassionate] medical care always and everywhere."

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MORBIDITY AMONG PENSIONERS LIVING IN RURAL AREAS

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[Article by M. V. Korobov and A. A. Dyskin, candidates of medical sciences, Leningrad Scientific Research Institute of Expert Evaluation of Work Fitness and Vocational Guidance for the Disabled]

[Text] The task of mutilevel investigation of health status of pensioners has emerged due to the need for additional mobilization of manpower reserves in rural areas, particularly by involving more broadly in socially useful labor the group of individuals who have retired because of their age.

As we know, the incidence of chronic diseases rises with age; however, the indicators obtained by different authors who studied cumulative frequency of requests for medical attention referable to the elderly population range from 600 to 1100/1000 elderly people. They mention factors that influence the frequency of seeking attention by pensioners living in rural areas, including distance of medical institutions from the place of residence, condition of roads, presence or absence of scheduled transportation, necessity of obtaining a medical [disability] certificate or absence thereof, diminished mobility, adaptation to chronic pathology, habits of self-treatment, etc. The results of a combined physical could be one of the sources of information about the health status of the public; however, such examinations of physical condition and work capacity of elderly people living in rural areas have not been made in recent times.

Our objective here was to make a comparative study of the incidence of chronic pathology among pensioners living in rural areas, on the basis of data referable to number of times they sought medical attention over a 3-year period and results of a comprehensive medical examination. Fitness for work of the group studied was assessed on the basis of the results of the physicals.

Requests [visits] for attention were studied over a 3-year period (1977-1979) for 2510 pensioners up to 70 years of age who were on the rolls of social security departments and resided in villages with a district hospital or in areas no more than 5-6 km away from such a hospital or a central rayon hospital. We used typological cluster sampling with maximum error of cluster selection of no more than 5% to select the pensioners. Of this set, 35.5% were submitted to comprehensive medical examination by a team of expert physicians with use of additional examination methods.

Table 1.
Incidence of chronic diseases among pensioners according to cumulative requests for medical attention (per 1000 pensioners of the same sex, age and occupation)

SEX	AGE YEARS	PROFESSIONAL ACTIVITY OF PENSIONERS		
		WORKING	NOT WORKING	TOTALS
MALES	60—64	483,9	636,4	523,8
	65—69	600,0	647,1	625,0
TOTALS		521,7	642,9	567,6
FEMALES	55—59	571,4	659,1	630,8
	60—64	650,0	772,7	770,8
	65—69	693,1	728,4	724,4
TOTALS		623,0	710,3	697,6

According to cumulative requests for medical attention in the above group, the incidence of chronic diseases constituted 678.1/1000 individuals of retirement age. Over the 3-year period, only 37.1% of pensioners on the rolls visited medical institutions due to chronic diseases. Women made such visits for chronic diseases more often than men (Table 1). Maximum incidence of diseases was recorded for women 60-64 years of age. Unlike women, the incidence of chronic diseases increases in the older age groups of men.

Distinct differences were demonstrable in incidence of chronic diseases between groups of pensioners who were and were not engaged in socially useful labor. In all age and sex groups, cumulative morbidity was lower among employed pensioners than those who had stopped working. This confirms the previously established fact that elderly people who are less burdened with chronic pathology continue to work.

With regard to structure of chronic pathology among pensioners of both sexes, diseases of the circulatory system are in first place (41.7%), diseases of digestive organs are in second place (16.9%), diseases of respiratory organs are in third place (10.8%), diseases of the nervous system and sense organs are in fourth place (10.3%) and in fifth place are diseases of the skeletomuscular system and connective tissue (9.6%) (Table 2). These categories of diseases constitute 89.3% of all demonstrated chronic pathology. For men, the highest indicators per 1000 were referable to diseases of the circulatory system (218.6), skeletomuscular system and connective tissue (95.9), respiratory organs (80.5), nervous system and sense organs, digestive organs (65.2 for each); for women the figures were: diseases of circulatory system (298.7), digestive organs (131.3), nervous system and sense organs (80.1), respiratory organs (67.3), skeletomuscular system and connective tissue (59.1).

There were more significant differences in both level and place in the structure of chronic diseases as related to employment of pensioners. For working pensioners, as compared to nonworking ones, there was a lower incidence of diseases of the circulatory system (206.6 and 300.2/1000, respectively), digestive organs (77.0 and 124.5), higher incidence of diseases of the skeletomuscular system and connective tissue (101.3 and 57.5), nervous system and sense organs (81.0 and 60.7). The differences in incidence of chronic pathology of working and nonworking pensioners enable us to determine the diseases that limit the most the participation of pensioners in socially useful labor. These diseases include the diseases of the circulatory system, digestive organs, malignant neoplasms, mental disorders and, to a lesser extent, diseases of the nervous system and sense organs, skeletomuscular system and connective tissue, respiratory organs.

Table 2. Incidence and structure of chronic diseases among pensioners according to requests for medical attention over a 3-year period and comprehensive physical examinations

CLASS OF DISEASES	ACCORDING TO VISITS			PHYSICALS	
	PER 1000 PEN-SIONERS	PER 1000 PEN-SIONER VISITS	% OF TOTAL	PER 1000 PEN-SION-ERS	% OF TOTAL
INFECTIOUS AND PARASITIC DISEASES	3,8	10,3	0,6	13,3	0,4
NEOPLASMS	10,4	28,1	1,5	19,9	0,6
MALIGNANT NEOPLASMS	5,9	15,9	0,9	8,5	0,3
ALLERGIES, ENDOCRINOLOGICAL DISEASES, METABOLIC DISORDERS AND NUTRITIONAL DISORDERS	8,5	22,9	1,3	162,8	5,0
DISEASES OF ENDOCRINE GLANDS	8,1	21,9	1,2	53,0	1,6
DISEASES OF BLOOD AND HEMOPOIETIC ORGANS	1,4	3,8	0,2	6,6	0,2
PSYCHOSIS, NEUROSIS AND PERSONALITY DISORDERS	9,9	26,7	1,5	48,7	1,5
PSYCHOSIS AND PERSONALITY DISORDERS	2,8	7,6	0,4	5,7	0,2
DISEASES OF NERVOUS SYSTEM AND SENSE ORGANS	69,8	188,4	10,3	275,7	8,4
CENTRAL NERVOUS SYSTEM DISEASES	2,6	7,0	0,4	23,0	0,7
PERIPHERAL NERVOUS SYSTEM DISEASES	33,1	89,4	4,9	116,8	3,6
DISEASES OF SENSE ORGANS	34,1	92,1	5,0	135,9	4,1
DISEASES OF CIRCULATORY SYSTEM	282,9	763,7	41,7	1581,2	48,2
RHEUMATIC HEART DISEASE	0,7	1,9	0,1	8,6	0,3
ATHEROSCLEROSIS OF CORONARY VESSELS	101,3	273,5	14,9	658,1	20,1
ATHEROSCLEROSIS OF CEREBRAL VESSELS	67,2	181,4	9,9	538,6	16,4
ESSENTIAL HYPERTENSION	91,4	246,7	13,5	232,1	7,1
DISEASES OF PERIPHERAL VESSELS	20,1	54,3	3,0	105,6	3,2
DISEASES OF RESPIRATORY ORGANS	73,4	198,2	10,8	165,0	5,0
DISEASES OF DIGESTIVE ORGANS	114,5	309,1	16,9	308,9	9,4
CHRONIC GASTRITIS	59,2	159,8	8,7	115,0	3,5
PEPTIC ULCERS	4,3	11,6	0,6	17,1	0,5
DISEASES OF LIVER AND BILE DUCTS	42,6	115,0	6,3	128,3	3,9
GENITOURINARY DISEASES	24,2	65,3	3,6	53,1	1,6
DISEASES OF KIDNEYS AND URINARY TRACT	18,1	48,9	2,7	39,4	1,2
DISEASES OF SKIN AND SUBCUTANEOUS TISSUE	6,9	18,6	1,0	23,0	0,7
DISEASES OF BONES AND LOCOMOTION ORGANS	65,3	176,3	9,6	582,7	17,8
OLD AGE, SYMPTOMS AND STATES NOT DEFINED	7,1	19,2	1,0	41,0	1,2
TOTALS	678,1	1830,6	100,0	3281,9	100,0

According to the comprehensive physicals, "pathological involvement" of pensioners constituted 3281.9/1000, which is 4.8 times higher than according to times they sought medical attention. According to the results of these physicals, there was a distinct trend toward rise of level of "pathological involvement" with increase in age (from 2786.9/1000 at 55-59 years of age to 3521.3 at 65-69), which was not observed according to number of visits for medical attention. The burden of chronic pathology among pensioners was greater according to examination findings than requests for medical attention. There were less differences in the structure of demonstrated pathology, where diseases of the circulatory system were in first place (41.7 and 48.2%) according to requests and physicals. A similar or close share in the structure of chronic pathology was noted for infectious and parasitic diseases, diseases of the endocrine system, nutritional and metabolic disorders, diseases of blood and hemopoietic organs, mental disorders, diseases of the skin and subcutaneous tissue, i.e., diseases that are the most severe at an elderly age and make it necessary for pensioners to seek medical attention.

Also important is the fact that the indicators of incidence of chronic diseases, according to findings of the comprehensive physicals, did not differ appreciably in pensioners who did and did not seek medical attention over the 3-year period, constituting 3242.3 and 3263.5/1000, respectively.

These indicators show that the characteristics of distribution of chronic diseases among elderly rural residents, according to cumulative requests for medical attention, by no means correspond to their real "pathological involvement." The results of studying frequency of seeking medical attention can only offer an idea about the structure of diseases, but for some categories it too is not accurate enough.

The actual incidence of chronic diseases among pensioners is better determined when calculated per 1000 requests for medical attention. Such a calculation is valid, since the indicator of incidence of chronic diseases based on examination findings is calculated per 1000 people examined. The incidence of chronic pathology calculated per 1000 seeking medical attention is close to the figure found on the basis of the physicals with regard to a number of diseases (infectious and parasitic, diseases of digestive organs, skin and subcutaneous tissue, genitourinary organs), whereas it is even higher with regard to some diseases (neoplasms, including malignant ones, mental disorders, diseases of respiratory organs). At the same time, more appreciable differences are demonstrable with respect to diseases of the endocrine system, nutritional and metabolic disorders, diseases of the circulatory system, skeletomuscular system and connective tissue. These differences are related to the fact that a physical can pick up even early manifestations of diseases or diseases for which pensioners do not turn to medical institutions.

The data on incidence and structure of chronic pathology do not provide a full idea about the health status of pensioners, particularly for answering questions related to investigation of the possibility of involving them in socially useful work. In this regard, the method of integral evaluation of health status according to frequency of seeking medical attention, which was developed by the Institute of Gerontology, USSR Academy of Medical Sciences, merits attention; it is based on criteria of nature of disease, severity and number of visits to medical institutions because of such disease. According to these criteria, we can make a distinction between three groups of pensioners: 1) relatively healthy, i.e., those who do not go to medical institutions or do so only for acute diseases; 2) patients with uncomplicated forms of chronic diseases and 3) patients with complicated forms of chronic diseases. This method is used extensively to assess the health status of urban pensioners (B. A. Voytsekhovskiy et al.; G. Moskalets, and others).

Using this method to assess the health status of pensioners living in rural areas, it was determined that relatively healthy pensioners constitute 62.9%, those with uncomplicated forms of chronic diseases 25.8% and with complicated forms 11.3%. This structure of the pensioner group health status differs significantly from the results of the physicals, according to which essentially healthy pensioners constitute only 4.1% of the entire group.

Such differences in evaluating the health status of pensioners on the basis of frequency of seeking medical attention and of the physicals are attributable primarily to the less frequent requests of rural pensioners for medical attention, as compared to urban ones. It should also be stressed that it is apparently not justified to single out the category of relatively healthy pensioners who did not seek medical attention with reference to those living in rural areas, since, as we have stressed before, the morbidity rate among them does not differ from the level of morbidity referable to pensioners who did seek attention at medical institutions. For this reason, it is deemed expedient to include in the group of relatively healthy pensioners only individuals who sought medical attention for acute diseases, who presented no chronic diseases, and accordingly to calculate all health indicators only for individuals who have visited medical institutions. If we abide by this condition, the share of healthy pensioners constituted 28.9%, according to our investigation, those with uncomplicated forms of chronic diseases constituted 49.4% and those with complicated forms 21.7%.

Work capacity, evaluation of which is based on comparison of functional capacities of elderly people and nature of work they are performing at the present time or performed in the past, should be considered among the most precise criteria for determining the employment capabilities of pensioners, as shown by the results of this investigation. Expert evaluation of fitness of pensioners for work, made by expert specialists in the course of the physical, revealed that 25.8% are entirely fit for work, in spite of the presence of some chronic disease, 33.2% are employable with some restrictions and 41.0% are unfit for work entirely, or can continue work only under specially provided conditions (including work in the home).

The structure of pensioners according to health status, when calculated only on the basis of frequency of seeking medical attention, corresponds rather well to their fitness for work, primarily according to share of relatively healthy people who constitute the most realistic manpower reserve in rural areas. A comparison of the data submitted above warrants the statement that one can make an approximate assessment of the health status of pensioners and predict their fitness for work on the basis of frequency of seeking medical attention.

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DEFICIENCIES IN VILLAGE HEALTH CARE

Moscow IZVESTIYA in Russian 29 Jan 83 p 3

[Article by Professor V. Kotel'nikov, Ryazan': "Without Allowances for the Interior"]

[Text] Recently I received a letter. "I want to share some thoughts on the state of the medical service in Vyshgorod village. I have lived here for 50 years now. Earlier we had an out-patient clinic. It was housed in a wooden building. In the vestibule stood flowers and a table with popular medical literature. Located next to the out-patient clinic were a maternity house and a hospital. Right there, not far away, were situated the maintenance buildings: a drying-room for linen, a bath, a stable with horses for maintenance needs and visits to patients. An experienced physician always lived in the village.

"Now everything is different. There is a small hospital, but in the evening the physician cannot be found there: the physician comes and goes daily on the train, serenely abandoning the patients. But we have fine housing. The orchard and garden, which have long been with the hospital, are neglected. Instead of horses there is now a special vehicle. But it is frequently broken down...."

I talked with the author of the letter, Afanasiy Fedorovich Malushko. For half a century he has worked as a teacher in this large Ryazanian village. For many years he was the director of the school, and he continues to teach the children even now.

I could appreciate his concern. In fact, one can understand that life undergoes changes even in the village. That the small patriarchal village hospitals, in which the only specialist-generalist was a physician of the Zemstvo mold, has been replaced by a different organization of health care. But in the country this is sometimes done such that in the final analysis the daily care and attention for a person is diminished.

Today, the main component in the health care of village workers is the central rayon hospital, well equipped and possessing all the necessary means for diagnosis and qualified specialists as well.

Here, for example, in the letter was the matter of a maternity house, which earlier was affiliated with the out-patient clinic. Today, these maternity houses are gone, not because of anyone's whim but because, as life has shown more than once, the risk of complications is greater there. And now the maternity houses are organized primarily in rayon centers.

But in another sense the old village teacher is right. In enlarging the village hospitals, it must not be forgotten that if a rayon center is not nearby it is not good to weaken the small hospitals, where people from time immemorial have grown accustomed to receiving, at any time, assistance, advice and consultation. Of course, a city resident always has such an opportunity. In villages distant from a rayon center, such a hospital should exist with full status side by side with the paramedic point. Such hospitals should not be displaced, "physicians for an hour" should not be sent to them and they should be strengthened.

Each of these hospitals should, in our view, have a minimum of two physicians with a specialization in therapeutics and in pediatrics. Such a uchastok hospital must be provided also with automobile and animal-drawn transport. The local Soviet organs must also consider the renovation and repair of small hospitals.

What is an exemplary village hospital, and who should we want to see as its cadres? It seems that a good example could be the Serpovskaya Uchastok Hospital in Morshanskiy Rayon of Tambov Oblast, which is headed by Alla Ivanovna Moskvina, a native of this region, herself advancing from a nurse in a children's clinic and surgical nurse.

The rayon leadership as early as in the construction of the new hospital building gave the hospital considerable attention. Constant assistance was rendered to the hospital by N. Marina, deputy of the USSR Supreme Soviet, Hero of Socialist Labor and chief of the pig farm of the Leninskiy Put' collective farm. In addition, this medical institution also has a close relationship with the village soviet. This is because the former hospital feldsher, N. Koldashov, was selected as the chairman of the Executive Committee of the village Soviet of People's Deputies. Now the hospital can receive 25 people for treatment at one time, and during acute need, 50.

The treatment clinics are well equipped here. The dining room and kitchen meet modern requirements. Neither is the hospital maintenance deficient: central heating, a sewage system, hot and cold water and modern refrigerators. The hospital has two automobiles and a horse. This is sufficient for maintenance needs and for visits to patients.

In the solution of any problems, the hospital receives considerable assistance from the chairmen of the local collective farms, Leninskiy Put' (N. Orlov) and Krasnyy Stroitel' (L. Nazarov). They respond attentively to any request by the physicians and frequently themselves offer help. Patients are sent from here to the rayon center only in the most difficult situations.

If it is a matter of the quality of medical service in the village, then, of course, the problem of physician training cannot be ignored.

We, the physicians, unfortunately occasionally encounter incompetency in one or another colleague and, which is much worse, indifference and the unwillingness to work properly. I am convinced that we do not make use of all opportunities available for a clear organization of affairs. A clear plan of specialization can be drawn up, and all physicians will gain the required knowledge. Scientific-practical conferences must be organized more frequently right at the work place. The real issue is to encourage the exemplary physician. To declare gratitude to him, to provide a priviledged pass to a good resort. But the loafer can and should be forced to work or to get out of medicine.

But more difficult situations also occur: a person is neither a loafer nor does he shirk from advanced training, but things do not go right with him. This is that ballast which by various unknown means still penetrates the medical institutes, but then "goes out" into independent work. He can be accused of nothing, and it is impossible to rely on the person.

This is a very painful question. And it was opportunely raised in IZVESTIYA by A. Serdyuk in the article "A White Coat and a Clean Conscience" (No. 39 for 1982). He, in particular, wrote that in Ukrainian medical institutes there is a relatively high student attrition from the earliest terms. This is correct: it is better to tell a person straightforwardly about his unsuitability for the profession while there is still time to select a different route and before money and time have been spent for his education. People who clearly do not belong in medicine can be cut off even earlier. This is in fact accomplished when the organization of admissions to medical VUZ's is improved.

Today the Ministry sends to medical institutes from other VUZ's only the chairmen of the state final examination commissions. One of the purposes of such a cross inspection is to prevent the graduation of inadequate specialists. But this is to put the cart before the horse. At the final exams, after six years of study, the attrition should be virtually zero.

There are other, fully resolvable problems. How, for example, to understand the unequal position of a junior medical worker, of an orderly, upon admission to the institute? The probation for a pupil taking a school-leaving examination who has worked at a factory or collective farm equals one year, but for an orderly, no less than two years. Why? The job of orderly is not prestigeous, there are always free places in any hospital--come and you work. And if a person effectively and with love for the patients worked off this year in the hospital, one can already seriously speak of his calling.

The training of physicians for the village is our most important task. Here, one must look many years into the future. The scientists of the Second Moscow Medical Institute are acting correctly, organizing study groups in the village shcools of Tambovshchina and selecting capable students, which then enter this Moscow VUZ. And after completing the VUZ, they return to work at their birth places.

I would like to say one more thing about his organizational feature. Life has shown that the creation in oblast cities of different therapeutic centers for city and village reisdents was unwarranted. This dissipates efforts and resources. Why, for example, must a separate pulmonary surgery, stomatology or cardiology be organized? No, single centers will be more powerful, and it will be easier to establish in them truly qualified groups of physicians. It is important in one additional respect that this artificial division be eliminated. It's elimination will increase the number of experienced specialists who will go out with specialist advice into the rayons and receive patients from the "interior". The diagnostic base will be improved. This means that the level of treatment of village residents will in fact approximate that which already exists in the city.

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URGENT TASKS IN NUTRITIONAL HYGIENE IN CONNECTION WITH DECISIONS OF MAY (1982) PLENUM THE CPSU CENTRAL COMMITTEE

Moscow GIGIYENA I SANITARIYA in Russian No 11, Nov 82 pp 4-6

[Article by K. S. Petrovskiy, First Moscow Medical Institute imeni I. M. Sechenov]

[Text] Enhancing the well-being of the people and meeting their needs for all requirements and, primarily, for the products of nutrition has been and is always at the center of attention of the CPSU, the Soviet government and the state as a whole.

The correct and shortest route to a successful resolution of the food problems is to realize and put into practice the Food Program, approved and adopted by the CPSU Central Committee's Plenum of 24 May 1982. In a report at the May 1982 Plenum, Comrade L. I. Brezhnev said: "The Program embodies a goal-directed, comprehensive approach to the solution of the food problem. The most important feature of such an approach is to coordinate and unite the work of both agriculture itself and the branches of industry, transport and trade that serves it, to subordinate all their activity to the final overall goal of producing high-quality products of nutrition and supplying them to the consumer"[1].

"In directing the government to a comprehensive solution of the food problem, the CPSU Central Committee, as I have already stated, has presented the task of assuring a steady supply to the population of all types of food, of markedly increasing the consumption of high-quality products and appreciably improving the structure of nutrition"[2].

And so, the task has been presented of appreciably improving the structure of nutrition of our nation's population. This task should be considered as primary in all fields of scientific and practical activity, including the field of nutritional hygiene. All scientific institutions--scientific research institutes, departments and laboratories--working in the field of nutrition must subordinate their scientific and practical activity to the development and realization of questions of the improvement of the structure of nutrition. These questions must become central in all work of these institutions. The Institute of Nutrition of the USSR Academy of Medical Sciences must render organizational and technical assistance in conducting work for validating and developing measures for improving the structure of the population's nutrition.

In the report cited above, L. I. Brezhnev noted: "Whereas the diet of Soviet man corresponds to physiological norms in the overall level of caloric content, the structure of nutrition must be improved. The demand for meat and dairy products is not being met; vegetables and fruit are inadequate"[3]. Under the contemporary conditions of the high tempos of life and intense activity of man, of a high level of technical progress, mechanization and automation of industrial processes, under conditions of low physical stress and insufficient overall motor activity, the daily expenditures of energy have declined and in a large number of instances do not exceed 2,500-2,700 kcal. However, with such negligible energy expenditures the quantity of food consumed is much more than is necessary. This creates the conditions for the development of excess body weight.

The large percentage of overweight people (up to 50% in some instances) is an indicator not only of low physical stress, but also of the incorrect structure of nutrition.

An excess consumption of readily-assimilable carbohydrates is noted in the structure of the nutrition of many people under contemporary conditons owing to such products as baked goods from wheat flower of higher grades and, also, sugar and confectioneries. It is appropriate to recall that 50-100 g per day is recognized as the physiological norm for sugar consumption. This quantity at the upper limit can be considered as the magnitude of planned sugar consumption per person in the population, which comprises 36.5 kg per year. In 1980 our normal sugar consumption was determined at 44.4 kg per year per person in the population, and 45.5 kg per person is planned in 1990. Thus, the sugar requirement in the USSR is essentially fully met, but at the same time the unlimited possibilities for sugar consumption should be utilized rationally, not to the detriment of health. It should be considered that nearly 50% of the adult population is overweight and must limit sugar consumption to 50 g per day, which should also be considered in planning the mean consumption per person.

An increased stress on the nervous system is seen under contemporary conditions, in which connection incresed demands are made on the neuropscyhological state of modern man. In the first place, it is necessary to increase motor activity and reduce excess body weight. The struggle for normal body weight is combined with the struggle for a normal neuropsychological status, for the elimination of elevated reactivity and irritability. An important role in realizing these salutary measures is referable to the correct structure of nutrition.

The carbohydrate shift noted in the structure of nutrition is inconsistent with the requirements of the body under the contemporary conditions of life and activity. Furthermore, the predominance of carbohydrates in the structure of nutrition is intimately connected with the rise in the energy value of food and the formation of diets of a high caloric content.

Under contemporary conditions, a high caloric content is not so important in the structure of nutrition as are the biological value and activity of food. A high biological activity of food can be provided by means of a rational increase in the consumption of such products as milk and dairy products, meat and fish and their processed products, eggs, vegetables, fruits, citrus and berries. All types of nuts--walnuts, filbert, pine, etc.--are usefully utilized as nutritional products highly active in a biological respect. In this connection, it is necessary to take into account and under protection all nut orchards and to take all measures for the organization of the timely, careful collection of nuts that have reached maturity.

Increasing the biological value of food, providing the requisite nutritional content of a balanced complex of A, E, C. B_1, B_6 and vitamins of other groups, of phospholipids, lecithin, choline and, also, other substances highly active in a biological respect is an important measure for improving the structure of nutrition. In this connection, an urgent task of nutritional hygiene becomes the development substantiation of the optimal biologically-active complexes that can be incorporated in diets by means of a collection of the appropriate assortment and quantity of food products in the improved structure of nutrition.

An important task in nutritional hygiene is to participate in developing and substantiating the optimal average-per-person set of food products appropriate to the contemporary structure of nutrition. Serious research work is required in cooperation with institutes of the food and meat-dairy industry, with institutes of the All-Union Lenin Academy of Agricultural Sciences and with economic and statistics organizations of the USSR Gosplan for substantiating, refining and developing the collection and quantity of food products per person in the population necessary for the most complete satisfaction of requirements.

Directly related to determining and substantiating the average-per-person set of food products are the recommended physiological norms of the requirement for energy and food substances, which must, by all means available, be supported with experimental data on the actual requirement, according to the character of labor and the overall conditions of life and rest of that population group, with respect to which the recommendations are made concerning the requirements for energy and food substances. In the final analysis, the recommended physiological norms of nutrition must be made to correspond completely with the established set of food products per person in the population that assures satisfaction of physiological requirements.

The development of the optimal structure of the nutrition for the population and the determination of the average-per-person set of food products must be based on the results of thorough, scientifically-significant investigations to refine and determine the physiological requirements for energy and food substances (proteins, fats, carbohydrates, vitamins and mineral salts) of the various occupational groups in the population and, also, on the findings of a careful study of economic and statistical materials related to the assessment of the nation's resources and the state of the population's nutrition.

It remains to study the reexamine the question as to the optimal indicators of body weight in modern man. The indicators of "ideal" body weight that are used at the present time were computed for the past rather than for the present and especially not for the future. These body-weight norms were calculated for people doing physical manual labor both at work and in daily life. If the old criteria for evaluating body weight continue being used for people living and working under conditions of the accomplishments of modern technical progress, then it is possible that a man with an "ideal" body weight will be a rarity in the next two to three decades, while the majority of people will be overweight. It is now asserted that 50% of our population is overweight. This percentage will continue to increase. Considering the altered conditions of work and of the entire life style of man under contemporary conditions and the universality of "sitting" time both at work and during nonworking time and, also, considering the unavoidably-altered body weight even when physical exercises and other physical corrective measures are performed, there is now a real need for the development of new indicators of ideal and normal body weight for people of the contemporary period of life and activity. Undoubtedly, some weight indicators that we now class as indicators of excess should actually be considered as normal for the contemporary conditions.

One of the most important tasks of nutritional hygiene in providing for the normal structure of the population's nutrition is combating the various distortions in nutritional structure developing in some people under the influence of the propaganda of incorrect, pseudoscientific theories in the field of nutritional hygiene. In this respect, the greatest harm is inflicted by starvation and the eating of raw foods, especially raw cereals and meat. While raw vegetables can in some measure be recognized as healthy, raw meat and cereals must be categorically not recommended both in the interests of health and in an economic respect as a nonrational expenditure of food materials, as well as due to the exceptionally low assimilation of raw cereals and the overloading of the digestive system by coarse uncooked cellulose. In light of the modern theory of food fibers and certain aspects of their negative influence, including the possible penetration into the vascular flow, large concentrations of cellulose in the digestive tract should be treated with extreme caution.

A special question is the rational, most-beneficial use of high-value food products. In the first place, it is necessary to consider the rational consumption of butter. It need not be demonstrated that a vast quantity of milk is needed to produce a ton of butter. The high value of this product in a gustatory and biological respect also need not be demonstrated. This is truly an outstanding food product. All the diverse biologically-active components of butter are retained when it is consumed directly after being spread on sandwich bread or added to prepared soup, sauce or the first dish directly on the table before the user. Only under these conditions are all the biologically-valuable parts of butter retained. The intense heating of butter when it is utilized for culinary preparation (braizing, roasting, preparation of dressings and sauces, addition of butter to dough when preparing breads, baking and other types of food preparation) in which it is subjected to intense heating in large degree destroys butter, in a biological respect, and reduces it to the level of a product differing little from the common culinary fat used in culinary practice. Butter should not be subjected to intense heating; this product is most valuable upon direct consumption.

One of the crucial tasks of nutritional hygiene in the development of the optimal structure of the population's nutrition is to provide for the interests of the health of the population. As an example, one can cite the problem of animal fat and the problem of excess sugar in the nutrition of the contemporary person and point out their role in the development of atherosclerosis, hypertension, ischemic heart disease and other cardiovascular disturbances. One should consider the need not only for treatment of these diseases but also for their prophylaxis. The important role of excess animal-fat and sugar consumption in the development of atherosclerosis and cardiovascular pathology is well known. In this connection, it is natural for specialists in nutritional hygiene to strive to limit somewhat and lower the consumption of sugar and animal fats in a portion of the adult population. It is not excluded that in a number of instances this decline will be below the magnitudes of the average-per-person collection of food products adopted in the nation.

In the present article we have by no means exhausted all tasks confronting specialists working in the field of nutritional hygiene and aiming for the successful realization of measures in the Food Program. We have made only a first step and have systematized urgent tasks in this direction. In particular, in the present article, we did not touch upon tasks concerning hygienic questions associated with the increase in the chemicalization of agricultural production. They have already been clarified in other articles and will be further clarified in subsequent publications.

FOOTNOTES

1. L. I. Brezhnev, KOMMUNIST, No 9, 1982, p 7.

2. L. I. Brezhnev, op. cit., p 7.

3. L. I. Brezhnev, op. cit., p 6.

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REVIEW OF BOOK ON HYGIENE OF NUTRITION

Moscow GIGIYENA I SANITARIYA in Russian No 11, Nov 82 pp 88-89

[Review by M. I. Ivashchenko and M. V. Krivonosov of book "Gigiyena pitaniya" [Hygiene of Nutrition] by V. D. Vankhanen, P. N. Maystruk, A. I. Stolmakova, et al.; Zdorov'ya, Kiev, 1980, 304 pp]

[Text] The manual consists of three sections: "Principles of Rational Nutrition", "Sanitary Epidemiologic Importance of Food" and "Organization of Standard Supervision in the Field of the Hygiene of Nutrition".

The first section is opened by the chapter "Basic Hygienic Requirements for the Organization of Rational Nutrition". While in general evaluating the scientific value of this chapter highly, we nevertheless believe that it would have been useful to formulate in it precisely the concept of "rational nutrition" and to set forth its hygienic requirements, substantiating them from physiological-biochemical and hygienic points of view. Here, there should have been described in detail the essence of the principle of protecting the internal environment of the organism and discussed the basic problems in the hygiene of nutrition as a science and a subject of practical activity of the sanitary physician of the appropriate specialization.

Further examined in this section are features in the feeding of various groups of the population. The most complete is the second chapter "Hygienic Principles of Feeding Workers in Industrial Production", in which features in the feeding of miners, workers in chemical industry and workers in hot shops are successively described. The drinking regime under conditions of heat stress is described in adequate detail. However, the material presented would have been even more interesting if it had contained general information on therapeutic-prophylactic nutrition as a means of prophylaxis of the possible harmful effect of a number of unfavorable factors in the production environment, primarily in the chemical industry.

In the third chapter, "Hygienic Principles of Feeding Agricultural Workers", attention was focused on questions in the organization of feeding under field conditions, which is fully warranted, since this question is constantly at the center of attention of physicians in the hygiene of feeding due to the presence under field conditions of a number of risk factors (in an epidemiologic respect).

There are also no objections about subsequent chapters concerning features in the nutrition of persons in intellectual work, athletes, pregnant women and nursing mothers, people with excess body weight and fat and children and adolescents. A positive evaluation is merited by the manual's inclusion of the chapter "Hygienic Principles of Nutrition in Students". However, this chapter would have been improved if the authors had further illuminated the most important question of the organization of nutrition under conditions of student construction brigades, where there are specific features and difficulties in the realization of this question. The chapter "Hygienic Principles of Nutrition of People of Middle and Old Age" was written at a modern scientific level. The chapter "Hygienic Principles and Organization of Therapeutic-Prophylactic Nutrition" contains no information on hyposensitizing nutrition, which reduces somewhat its value. In the chapter "Hygienic Principles and Organization of Dietetic Nutrition in the System of Public Nutrition", along with the exposition of the essence of the question are presented recommendations for the organization and realization of preventive and routine sanitary supervision (p 100), which contradicts the structure of the manual, having an independent section devoted to the organization of sanitary supervision in the field of the hygiene of nutrition.

Diseases transmitted through food are examined in sufficient detail in the second section. A detailed characterization is given of zoonotic and anthroponotic diseases. Special attention is given to helminthiases. Of considerable interest is the chapter devoted to food poisonings, although it would have been useful to note in it the possible etiologic role in the development of food toxicoinfections of Klebsiella, Hafnia and Enterobacter. The food poisonings caused by microorganisms not belonging to the intestinal-bacteria family--aeromonads and Pseudomonas aeruginosa--should have been described, if only briefly.

Of greatest practical value for sanitary physicians is the third section. Inexpediently included here was the chapter "Sanitary Epidemiologic Investigation of Food Poisonings", as food poisonings were characterized in detail in the preceding section (the indicated chapter would have found an appropriate place there).

The description of the organization and legal bases of state sanitary supervision of feeding at the beginning of the appropriate section in the manual is methodologically warranted. However, there is no information on the departmental sanitary service and the character of its interrelations with the organs of state sanitary supervision.

One would wish that the manual contained illustrations, which would have facilitated understanding of the material presented. Considering that the book is intended for sanitary physicians, it would have been useful to strengthen its handbook character, to introduce more tables, documents, etc.

As a whole, the manual is written at a high scientific level and, undoubtedly, merits a positive evaluation. The remarks we have made could be easily corrected upon revision of the book so necessary in the daily work of the sanitary physician.

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9942
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EFFECT OF VEGETABLE, HERB AND VITAMIN SUPPLEMENTS ON FOOD VALUE OF CANNED MEAT-CEREAL CHILDREN'S FOODS

Moscow GIGIYENA I SANITARIYA in Russian No 11, Nov 82 pp 18-21

[Article by L. A. Khovayeva, Z. A. Markh, L. I. Leychenko, N. A. Afanas'yeva and N. V. Evstratova, First Moscow Medical Institute imeni I. M. Sechenov]

[Text] The steady growth of the well-being of the Soviet people and the more complete satisfaction of their requirements for food products have, at the present time, advanced to the forefront questions of food quality. These questions are a center of attention of the party and government, as indicated by the documents of the CPSU 26th Congress and the May (1982) Plenum of the CPSU Central Committee "Food Program for the Period Until 1990 and Measures for Its Realization".

The biological value of food, the criteria of which are quite clearly reflected in the works of M. G. Kerimova, is the basis of its quality and supplementary protein reserve.

A feature of canned meats as nutritional products is the possibility of prolonged storage, which is achieved by sterilization. Heat treatment has a positive influence on the processes of digestion of meat protein. At the same time, severe heating conditions can lead to a decline in the susceptibility of proteins to digestive enzymes as a result of the interaction of monosaccharides with amino groups (Mayar reaction) and, also, the destruction of thermolabile vitamins, in particular thiamine (Markh and Shteynberg, 1968; Hofman, 1964). The nature of the changes in individual food substances and their interaction depends not only upon a number of external factors (temperature, time of its action on the product, pH of the medium and others) but also upon the food product. A change in the formulation of canned foods can change the chemical reaction, called the Mayar reaction, in a positive or negative direction with respect to biological value (Kalmykov and Logatkin, 1974).

We undertook to select canned-food samples[1] optimal in the sense of retaining food and biological value and to recommend their commercial production. The samples, designed for children's dietetic nutrition, were prepared on the basis of meat, cereals and vegetables with the addition of vitamins and a special collection[2] of herbs.

Four canned-food samples were prepared (second through fifth), the formulas of which stipulated the incorporation of beef (15%), pearl barley (20%) and squashes (12%) in the second and fourth samples and beef (15%), rice (7%), cabbage (30%) and carrots (5%) in the third and fifth samples. To all canned-food samples were added 3% each of vegetable oil and tomato puree, salt (0.5%) and sugar (1.5%). Water (35%) was added to the second and third samples and an infusion of herbs and synthetic vitamins (25 mg% C, 0.4 mg% B_1, 0.5 mg% B_2, 0.4 mg% B_6, 4 mg% PP and 0.5 mg% E) was added to the fourth and fifth samples in place of a portion (5%) of the water.

We transfered the quantitative and qualitative combinations of formula ingredients, under conditions of a biological experiment, to determine the optimal variants which would provide the most efficient utilization by the organism of the protein in the investigated product and, also, have the best influence on the course of metabolic processes in the organism.

Investigations, which followed the generally-accepted methodology recommended by FAO/WHO, were conducted with white rats of 40 g initial weight for 28 days. The animals received semisynthetic isocaloric diets, balanced with respect to the principal components. Taken as the internal standard was the casein diet (first group in the experiment) developed by the Nutrition Institute of the USSR Academy of Medical Sciences. The protein in the diet of the second through fifth groups of rats was represented by the second through fifth, respectively, canned-food samples being tested and comprised 4%. In connection with the low content of protein in the diet, when the appetite of animals significantly worsens and the food consumption and coefficient of protein effectiveness (CPE) are no longer, in our opinion, instructive, we focused attention on nitrogen balance, digestibility and net protein utilization.

Furthermore, a number of indicators of protein, fat and mineral metabolism were studied: the content of total protein and its fractions, the quantity of urea, calcium and phosphorous and the total cholesterol level in the blood serum (Tekhniko amino analyzer) and the quantity of total nitrogen (Nessler) and fat (Soxhlet) in the liver.

Observation of the animals showed that the rats of all experimental groups differed little with respect to external appearance and developed in accordance with keeping them on a reduced protein level.

The nitrogen balance of the animals of all experiental groups was positive (Table 1); however, the greatest nitrogen retention was noted in rats of the first, third, fourth and fifth groups, i.e., those that received the standard (casein) diet and canned foods with the addition of cabbage and carrots, vitamins and the special herb collection. The casein (standard) diet afforded greatest digestibility. A similar directionality of changes was found with respect to the indicator of net protein utilization.

Table 1. Biological value of canned children's food

Animal group	Nitrogen balance, mg/day	Nitrogen retention, mg/kg	True digestibility	Net protein utilization, %
First	81.60	1,611.11	71.80	72.85
Second	63.80	98.76	49.76	44.30
Third	79.20	1,494.33	53.33	49.50
Fourth	79.46	1,315.56	57.22	55.18
Fifth	91.41	1,802.95	59.33	57.3

Table 1 indicates the true digestibility of canned foods and the net protein utilization. A clear tendency towards increase in protein digestibility was found in canned foods with the addition of vitamins and the herb collection (fourth and fifth groups). The canned foods whose components were beef, cabbage, rice and carrots (third group) were better digested than the second group (beef, pearl barley and squashes).

The biological indices for the blood serum and liver tissue may be of interest from the point of view of evaluating the biological properties of the protein entering the organism of the growing animal. Therefore, we analyzed certain of these indices. No significant changes were found in the content of total protein and albumins in the blood serum of rats of the experimental groups; however, the albumin-globulin ratio clearly increased in the animals of the third, fourth and fifth groups. It should be noted that, when canned foods containing meat, rice, cabbage and carrots were consumed, the rats had a higher albumin-globulin ratio (3.16) than when they ate canned foods incorporating meat, pearl barley and squashes (2.1). In the latter rats, this index was minimum (2.1) also in comparison with the internal standard (2.56). Probably, this can be related to the favorable influence of vitamin supplements on protein metabolism due to the enhancement of the protein quality of the canned food and apparently, also, to the fact that the canned foods incorporating meat, rice, cabbage and carrots represented a more favorable combination of substances with respect to vitamins than did the canned foods containing,meat, pearl barley and squashes; this affected the biological values of the protein in the canned foods.

In analyzing the content of urea nitrogen in the blood serum of experimental animals (see Table 2), its distinct decline was demonstrated in rats of the first (milk protein), third, fourth and fifth groups. This indicator was signigicantly high in animals of the second group. The data presented testify to the high anabolic activity of milk protein, the protein of canned foods based on meat, rice, cabbage and carrots and with the addition of vitamin supplements. Protein anabolism declined significantly in the second group of animals, receiving canned meat, pearl barley and squashes.

Table 2. Certain biochemical indicators of blood serum of animals receiving canned children's food (mean ± error of mean)

Animal group	Total protein	Albumin	Albumin-globulin coefficient	Total cholesterol, mg%	Urea nitrogen, mg%
First	6.4±0.2	4.6±0.2	2.56	144±14	9.23±2.7
Second	5.8±0.3	3.9±0.1	2.10	127±13	23.00±2.10
Third	5.2±0.2	3.8±0.2	3.16	126±10	11.00±1.55
Fourth	5.4±0.4	3.9±0.1	2.60	127±7	10.50±1.68
Fifth	5.2±0.2	4.0±0.3	3.33	138±15	10.00±1.15

A very important pattern was revealed upon analysis of certain indicators of lipid metabolism. The level of cholesterol increased somewhat in rats of the fifth group (see Table 2), which may be assumed, insofar as the higher quality of the protein in these canned foods (with the sharply reduced level of protein in the diet) stimulated the production of cholesterol.

From Table 3 it is apparent that the greatest accumulation of total lipids in the liver occurred in rats of the second group, which received canned meat, pearl barley and squashes. The fat/nitrogen ratio declined (difference statistically significant) with the addition of vitamin supplements (animals of the fourth and fifth groups). The latter data testify to the favorable condition of the organism if the elevated content of cholesterol in the blood serum is accompanied by a decline in the quantity of liver lipids, since this demonstrates the favorable character of lipid metabolism in the organism or the adequate transport role of β-lipoproteins (which incorporate cholesterol). Simultaneously, the higher content of calcium in the blood serum of rats maintained on the casein diet (first group) and which received canned foods with vitamin supplements (fourth and fifth groups)--the Ca/P coefficient was 1.4 in rats of the first group, 1.1 and 1 in rats of the fourth and fifth groups, respectively, and less than 1 in rats of the other groups--confirmed the favorable influence of milk protein and vitamins on the condition of protein-fat and mineral metabolism in the experimental animals.

Table 3. Indicators of lipid and nitrogen metabolism in liver tissue of animals receiving canned children's food (mean ± error of mean)

Animal group	Total lipids g%	Liver nitrogen, g%	Fat/nitrogen coefficient
First	12.5±0.2	7.6±0.2	1.6
Second	19.0±0.5	10.0±0.1	1.9
Third	17.3±0.4	8.8±0.3	1.8
Fourth	14.10±0.4	9.1±0.1	1.6
Fifth	14.1±0.3	8.0±0.2	1.7

Conclusions. 1. The addition of cereals, vegetables and a special collection of herbs and vitamins to canned meat in specified concentrations creates the optimal combination of protein-carbohydrate and vitamin-salt substances that influence favorably the utilization and distribution of nutrient substances in the organism.

2. Canned foods produced from beef, cabbage, rice and carrots have a higher biological value (with respect to the protein component) as compared with canned foods from beef, pearl barley and squashes.

3. The introduction of synthetic vitamins and supplement of a special herb collection into the formula of canned foods prepared from meat, cereals and vegetables elevated the biological value of the protein of the canned foods studied, brining them closer to the internal standard, the casein diet.

FOOTNOTES

1. The canned foods were prepared by the children's nutritional products department of the Ukrainian Canning Industry Scientific Research Institute.

2. The special herb collection incorporated three herb species having anti-inflamatory bactericidal and diuretic actions.

BIBLIOGRAPHY

1. Hofman, K. FLEISCHWIRTSCHAFT, No 10, 1964, pp 1121-1124.

2. Kalmykov, P. E. and Logatkin, M. N., "Sovremennyye predstavleniya o roli sostavnykh chastey pishchi" [Modern Concepts of the Role of Food Components], Leningrad, 1974.

3. Kerimova, M. G., "Means of increasing the biological value of dishes of mass consumption," doctoral dissertation, Moscow, 1975.

4. Markh, Z. A. and Shteynberg, R. B., "Novoye v proizvodstve konservov dlya detskogo pitaniya" [Progress in the Production of Canned Children's Foods], Moscow, 1968.

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9942
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IMPROVING THE HEALTH SERVICE

Ashkhabad TURKMENSKAYA ISKRA in Russian 8 Jan 83 p 1

[Text] The Communist Party and Soviet government give constant attention to improving the nation's health-care system, regarding the care for the health of the Soviet people as a most important social task. A recent manifestation of this concern was the resolution of the CPSU Central Committee and the USSR Council of Ministers published in August 1982, "Additional Measures for Improving the Helath Care of the Population". Health care workers will have to apply a maximum of effort so that Soviet man always and everywhere obtains modern, qualified and sympathetic medical assistance.

The material-technical base for health care in Turkmenistan was considerably strengthened during the years of the 10th Five-Year Plan. The number of hospital beds in the republic increased to more than 29,000; the volume of hospital and polyclinic care was expanded. The people's health is cared for by more than 8,000 physicians and 21,000 middle-medical-workers. Medical service for the republic's inhabitants is rendered by 263 hospitals, 362 out-patient and polyclinic institutions and hundreds of feldsher-midwife points. Branches of oblast and city secondary medical schools began operating after the 1980-1981 shcool years in remote regions, where a shortage of middle-medical-workers is experienced. Entries to the Pediatric Department of the Turkmen State Order of People's Friendship Medical Institute increased to 300 people; a pharmaceutical department was opened here in 1981. The republic's sanitary-supervision service is steadily improving. The volume of emergency medical care has been expanded. Cardiological, proctological and oncological services have been established and are gathering strength. The republic's medical scientists have developed and transferred to practical health care a number of new methods for diagnosis and therapy.

An example of a conscientious attitude to one's work is given by the Ashkhabad City Polyclinic No. 8 (chief physician O. Dovletsakhatova). Here they employ advanced and progressive methods for receiving patients, which considerably economizes the patients' time, and lines have been liquidated. Widely known in the republic is the name of Kh. Khodzhagel'dyyev, Hero of Socialist Labor, Deputy of the Supreme Soviet of the Turkmen SSR and chief physician of the village hospital of Kala-i-Mor State Farm in Kushkinskiy Rayon, Mary Oblast. The workers of this state farm are all included in dispensary observation; prophylactic examinations are well run here; the network of feldsher-midwife points has been increased; sanitary posts for remote pastures have been developed. Also meriting favorable mention are the Order of Lenin Village Uchastok Hospital of the collective farm Sovet Turkmenistany of Gyamya village soviet in Gyaurskiy Rayon, Ashkhabad Oblast, which is headed by A. Nuryyev, Turkemn SSR Honored Physician and holder of the Order of the Red Banner of Labor; the Chardzhou Oblast Children's Hospital (chief physician R. Dzhorayev) and others.

But the future presents new tasks. The most important of these is the further development of the prophylactic direction of health care in a broad social plane. Its prompt solution depends upon the improvement of the most massive form of medical care--prophylactic. Under today's conditions, a broad implementation of measures is required for the primary prophylaxis of wide-spread noninfectious diseases, primarily cardiovascular diseases, cancer and diabetes, and for the reduction of the role of the risk factors that influence the development of these diseases. All prophylactic elements must be united into a single complex, which can be implemented with the participation of many ministries and departments and of the entire population.

New tasks were presented to health-care workers in connection with the decisions of the May and November (1982) Plenums of the CPSU Central Committee. The level of medical care for agricultural workers in our republic still lags behind the city level. Many uchastok and rayon hospitals are housed in unsuitable buildings, inadequately supplied with equipment and apparatus. Jobs related to the construction of new health-care buildings are not performed on time.

It is necessary to improve and bring closer to the village massive forms of medical care, primarily stomatological, oncological, ophthalmological and others. There is much for the health-care organs to do to improve the use of medical cadres, to staff with these cadres the village medical institutions.

A creative approach is needed to further improve the forms and methods of medical care for the workers of industrial enterprises and of the most important building-sites. There is virtually no industrial health-care service in the republic at the present time. The Ministry of Health jointly with other interested ministries should consider questions of the creation of medical-sanitary units serving the workers of a number of single-profile institutions on cooperative bases. This is an important reserve for raising the level of the health and work capacity of the population and is a most important factor in solving the socioeconomic tasks stipulated by the Basic Directions of the Nation's Economic and Social Development.

An urgent governmental task is the further improvement of the health care of women and children. However, the reserves in this matter are far from universally utilized.

Science plays a huge role in the development of health care and practical medicine. Its achievements will permit the republic's practical health care to more closely approach a solution to current medical problems. It is also necessary to raise the effectiveness of the state sanitary supervision, primarily in the field of agricultural production and industrial hygiene.

The most intent attention must be given to the training of highly-qualified cadres of physicians in all specialties and of middle-medical-workers; deficiencies existing in the work of selecting and educating medical cadres and establishing for them normal working and living conditions must be eliminated.

The elevation of the people's well-being and the improvement of the health of the Soviet people has always been at the center of attention of the Communist Party and the Soviet Government. A further example of genuine concern for the people's health were the decisions of the sixth session of the 10th USSR Supreme Soviet, which ratified the State Plan for Economic and Social Development and the budget for 1983.

Considerable resources were assigned to the development of health care. And the physicians of Soviet Turkmenistan are in turn fully resolved to perform the tasks they confront in further improving the republic's health service.

9942
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NEW ADDITIONS TO CHILDREN'S HOSPITAL IN DUSHANBE

Dushanbe KOMMUNIST TADZHIKISTANA in Russian 14 Jan 83 p 4

[Article by A. Ivanova: "Be Healthy, Children!"]

[Text] A new therapeutic building has been added to the complex of institutions of the children's infectious diseases hospital in Dushanbe. It accomodates an X-ray room, a pharmacy, and an exercise-therapy complex. We were there during the first day of operation of these new treatment offices.

The story should surely be begun by stating the fact that half a year ago the hospital acquired the most modern X-ray apparatus. Because of its dimensions it cannot be placed in an old room.

All comforts for sick children and their parents (if the child does not yet walk) have been provided in the new clinic. It begins with a comfortable receiving room. The fact that it is intended for children can be seen by the abundance of toys and children's furniture. In an office where children are usually afraid to enter beacuse of darkness, a light now shines continuously. The hospital's chief physician E. N. Nemirovskiy says with pride: "Everything necessary in an X-ray office we now have. There are only three such hospitals in the republic."

It remains to add that here children can be subjected to an X-ray examination in any view necessary (standing, lying, sitting and even...in a suspended (on special devices) condition). In so doing, the session lasts fractions of a second, i.e., the children are virtually unexposed to radiation. Also protected from radiation are the service personnel, since the control panel is located in another room, and the parents—they wait for the child in the receiving room. This same building accomodates a pharmacy. Earlier, the hospital made use of the services of a pharmacy located at another end of the city, which made for much inconvenience. Drugs were not always delivered on time; many things were not on hand when needed.

Furthermore, the exercise-therapy clinic has become the special pride of the chief physician, by whose initiative and persistence all of the changes have occurred here. It need hardly be stated that children weakened after an illness need physical exercise. In this room, which is light, spacious, and equipped with numerous devices for physical exercises, the children, under the supervision of the physician Natal'ya Ivanovna Kholanskaya, regain their former assurance in movements and strengthen their body.

It remains to add that soon to be commissioned at the hospital site is a building accomodating a hall intended for meetings between parents and attending physicians. A telephone connection to all departments will be at the service of the parents and medical personnel.

9942
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INTENSIFIED CONTROL OVER HOSPITAL PRACTICES

Moscow KOMSOMOL'SKAYA PRAVDA in Russian 19 Dec 82 p 1

[Reacting to the articles of KOMSOMOL'SKAYA PRAVDA, USSR Minister of Health S. Burenkov provided an official statement]

> [Text] In the article "Somebody Else's Pain" by Ye. Losoto (cf. our paper of 19 Jun 82) an alarming incident was reported which occurred in a children's hospital. The article generated many comments. Some of them were used in the sequel article "Conscience" (20 Nov 82). Again many more letters were received. The readers reported many analogous cases known to them and reflected on possible preventive measures regarding cruelty to teenagers, especially intolerable in medical institutions. This mail was forwarded to the USSR Ministry of Health. The Ministry analyzed in detail the articles and the letters. We received the following official reply.

The USSR Ministry of Health analyzed carefully the articles "Somebody Else's Pain" and "Conscience" published in Komsomol'skaya Pravda issues of 10 Jul and 20 Nov 82 and the letters to the Editor concerning this subject.

The Commission of the USSR Ministry of Health checked out the organization of therapeutic-preventive practice, the care and the organization of educational effort with teenagers in a number of hospitals in Moscow, Voronezh and in Moscow Oblast.

As a result of this review, serious violations were noted in some hospitals regarding the conditions for children's upkeep and the implementation of educational and pedagogical work with them. Managers of some institutions failed to control adequately the work in children's divisions during the evening and night hours.

The principles established by the USSR Ministry of Health relating to the official duties of the personnel in children's hospitals, methodological recommendations concerning organization of educational and pedagogical work with children in hospitals (1981), on the organization of the work of medical personnel in children's hospitals, and on the improvement of hospital support (1981) have not always been observed. In a number of hospitals there was no provision for chronically ill children as provided for in the Standard Act of the USSR Ministry of Health and the USSR Ministry of Education, very few students from pedagogical institutions were attracted to intern in children's hospitals, as provided for by the USSR Ministries of Health and Education in "Pedagogical Internship of Students in Children's Hospitals".

The review materials were discussed by USSR Health Ministry staff on 15 Dec 82. The staff decided to obligate the ministries of health of all union and autonomous republics, all managers of oblast' and state divisions of Health, directors of Main administration of Health - Moscow City Executive Committee, Leningrad City Executive Committee, Tashkent City Executive Committee to assure compliance with directives of the USSR Ministry of Health concerning organization of therapeutic-preventive practice and educational work with children in hospitals and to impelement, within 3 months, inspection of the organization of work in children's hospitals and departments, to correct deficiencies and to bring the guilty parties to account for their actions. In April 1982 the actions carried out should be reported to the USSR Ministry of Health.

It was pointed out to the directors of Main administration of Health in Moscow City Executive Committee and Moscow Oblast Executive Committee that proper control of the personnel at subordinate hospitals was non-existent with respect to the creation of minimal conditions for children's stay in hospitals.

Serious disciplinary penalties were placed on the Deputy Chief Medical Officer at the #2 Hospital of Infectious Diseases in Moscow and Chief Medical Officer at the Stupinskaya Central Rayon Hospital of the Moscowskaya Oblast'.

In addition, USSR Health Ministry recommended that the health ministries of RSFSR, UkSSR, KaSSR analyze the letters received by the editors of "Komsomol'skaya Pravda" in connection with the published articles, to check out facts reported in them and to undertake corrective measures.

> USSR Ministry of Health showed an example of a principle-oriented skilled response to the exposure by the newspaper and to letters of readers. The letters are still coming in. They will also be delivered to the specialists at the Ministry of Health.

[203-7813]

UDC 577.391:591.434

DAMAGE AND REPAIR PROCESSES OF SMALL INTESTINE MUCOSA IN IRRADIATED MICE PROTECTED WITH ENDOTOXIN FRACTIONS DIFFERING BY THEIR MOLECULAR WEIGHT

Moscow RADIOBIOLOGIYA in Russian Vol 22, No 6, Nov-Dec 82
(manuscript received 15 Jun 81) pp 822-824

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[Abstract] The goal of the present work was to study damage processes and subsequent reparative regeneration of small intestine mucosa in irradiated mice stimulated with high (HM) and low molecular weight (LM) fractions of the exdotoxin S. paratyphi B. These agents were administered intraperitoneally 24 hrs prior to exposure to radiation in 2.0 and 20.0 mg doses. It was shown that the effect of these agents was not identical. Administration of LM fraction resulted in higher resistance of intestinal epithelium to radiation damage and a faster reconstitution of normal tissue structure than administration of the HM fraction of the endotoxin. References: 10 Russian (1 by a Western author).
[187-7813]

UDC 577.391

COMPARATIVE STUDY OF REPURINASE (INCERTASE) ACTIVITY IN TISSUES OF RADIORESISTANT (RAPHANUS SATIVUS) AND RADIOSENSITIVE (VICIA FABA) PLANTS

Moscow RADIOBIOLOGIYA in Russian Vol 22, No 6, Nov-Dec 82
(manuscript received 12 May 82) pp 802-804

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[Abstract] An attempt was made to search for enzymes capable of repairing radiation damage to DNA in plants. Experiments were carried out on Raphanus sativus and Vicia faba sprouts grown in darkness at 26°C, the first being much more radioresistant than the second plant. The experimental

results showed that the repurinase enzyme, which is capable of repairing apurine sites of DNA by means of direct insertion of adenine into the apurine DNA, is present in tissues of Raphanus sativus. No indications of an inclusion of ^{14}C-adenine into the apurine DNA of Vicia faba was noticed. The question whether the presence or absence of this enzyme is related to the difference in their radiosensitivity needs further studies. Figures 2; references 11: 8 Russian (1 by Western author), 3 Western.
[187-7813]

UDC 577.391

EFFECT OF HEAVY IONS ON MAMMALIAN CELLS. PART 2: EVALUATION OF RBE OF ACCELERATED HELIUM, CARBON AND NEON IONS BY CYTOGENETIC INDICES

Moscow RADIOBIOLOGIYA in Russian Vol 22, No 6, Nov-Dec 82
(manuscript received 27 Apr 81) pp 791-795

GOVORUN, R. D., SMIRNOVA, O. A. and RYZHOV, N. I., Institute of Biomedical Problems, USSR Ministry of Health, Moscow

[Abstract] Based on various types of cytogenetic damage in Chinese hamster cells, an attempt was made to evaluate biological effectiveness of ^{4}He, ^{12}C, and ^{22}Ne heavy ions in comparison to gamma irradiation of ^{137}Cs, as a function of the adsorbed dose, LET (range of 8.8 to 8900 $MeV \cdot g^{-1} \cdot cm^2$) and duration of the study. The following results were obtained: in low dose radiation the RBE expressed as a function of LET is a curve with a maximum at 3600 $MeV \cdot g^{-1} \cdot$3600 $MeV \cdot g^{-1} \cdot cm^2$; in the same range of LET, RBE coefficients increased with decreasing dose. With high adsorption doses, on the background of a serious damage to the cells, the differences in biological effectiveness were levelled off in LET range from 8.8 to 3600 $MeV \cdot g^{-1} cm^2$ and at LET of 8900 $MeV \cdot g^{-1} \cdot cm^2$ RBE coefficient dropped down. At a late post-exposure time, the differences in ion effectiveness were levelled off even at low doses. The highest RBE was demonstrated with ^{12}C and the lowest with ^{22}Ne. Figures 2; references 9: 4 Russian (1 by Western author), 5 Western.
[187-7813]

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EVALUATION OF CARCINOGENIC ACTIVITY OF RADIATION AT CELLULAR LEVEL

Moscow RADIOBIOLOGIYA in Russian Vol 22, No 6, Nov-Dec 82
(manuscript received 2 Jul 81) pp 781-786

FILYUSHKIN, I. V. and PETOYAN, I. M.

[Abstract] The goal of the present review was to evaluate carcinogenic risk associated with low level radiation. Induction of malignancy by radiation may occur in two relatively independent phases: induction of precarcinogenic changes in target cells and potential development of altered cells into a diagnosable tumor, which may be independent of the radiation effect. Therefore the estimate of carcinogenic risk of low level radiation is initiated by a carcinogenic effect on cellular level, specifically by the formation of symmetrical chromosome translocations. This is supported by Philadelphia chromosome observed in patients with chronic myeloid leukosis in which the 22nd chromosome translocates to the 9th, in Burkitt lymphoma and in acute myeloid leukosis. This symmetrical chromosome translocation hypothesis leads to the following equation for the yield of carrier cells of precancerous mutations as a function of the radiation dose with a single exposure:

$$A(D_j) - cf(D_f)e^{-f(D_j)}$$

which produced results in good agreement with experimental findings on the induction of leukoses in mice by a single exposure to radiation. Figure 1; references 24: 8 Russian (1 by Western author), 16 Western.
[187-7813]

UDC 577.391

FACTORS DETERMINING VARIATIONS IN BIOLOGIC EFFECTIVENESS OF IONIZING RADIATION WITH DIFFERENT PHYSICAL CHARACTERISTICS

Moscow RADIOBIOLOGIYA in Russian Vol 22, No 6, Nov-Dec 82 (manuscript received 10 Feb 82) pp 727-738

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[Abstract] A review type article analyzing the relationship of radiosensitivity (D_0^{-1}) of pro- and eukaryotic cells to linear energy transfer (LET). The lethal damage in both pro- and eukaryots is caused by double strand breaks in DNA (DSB). Most of the prokaryots with wild repair genotype are unable to repair DSB and occurrence of even a single DSB in the genetic apparatus becomes a lethal event. Irradiation with low LET leads to considerable formation of DSB from single strand breaks (SSB) which normally can be repaired effectively by the cell. Unrepaired enzymic DSB play an important role in lethal effect of ionizing radiation. This type of damage can be diminished using radioprotectors. With increased LET the probability of the formation of direct DBS increases, while that of the enzymic DBS decreases. The cells of diploid eukaryots can actively repair DBS in contrast to haploid eukaryots. In general, biologic activity of irradiation with different LET is determined by physical and biological factors. An attempt was made in present study to show that the physical factors affect the yield of direct DBS of DNA, while the biological factors are directed towards the liquidation of DNA damage. The latter are controlled genetically. Figures 7; references 41: 17 Russian, 24 Western (1 by Russian authors).
[187-7813]

UDC 577.391:612.273:621.039.58

RADIOSENSITIVITY OF ORGANISMS DURING ANIMAL IRRADIATION IN MODIFIED GAS MEDIUM. PART 5: EFFECT OF CONCURRENT ACTION OF RADIATION AND PURE OXYGEN ON ANIMALS AT NORMAL PRESSURE

Moscow RADIOBIOLOGIYA in Russian Vol 22, No 6, Nov-Dec 82
(manuscript received 22 Apr 80) pp 818-822

VASIN, M. V., L'VOVA, T. S., KOROLEVA, L. V., ANTIPOV, V. V. and
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[Abstract] Results are reported on the effect of breathing pure oxygen pre- and post-exposure to lethal and nonlethal radiation. Experiments were done on randomly bred female rats, male rats $(CBAXC57Bl)F_1$ and on Syrian hamsters, irradiating them with gamma quanta of ^{60}Co in doses ranging from 155-245 mKl/kg, and a dose strength 1,113 mA/kg. It was shown that breathing pure oxygen at normal pressure 20 min prior to irradiating the above male rats with a 155 mKl/kg dose (nonlethal) facilitated regeneration processes of the cellular pool of bone marrow. No effect was noted on thymus and spleen mass. When lethal radiation dose was used, preexposure breathing of oxygen for 20 min and 2 hrs led to a slight but statistically significant effect on the survival of exposed rats at the 7th and 30th days post-radiation. Breathing pure oxygen during radiation exposure showed no significant effect on the course of acute radiation sickness. Figure 1; references 12: 11 Russian, 1 Western.
[187-7813]

UDC 577.391:591.111

INTENSITY DYNAMICS OF SPONTANEOUS CHEMOLUMINESCENCE OF RAT BLOOD SERUM UNDER TOTAL RADIATION EXPOSURE IN NONLETHAL AND LETHAL DOSES

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(manuscript received 3 Jan 81) pp 811-814

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[Abstract] Earlier it was shown that after total irradiation of rats, spontaneous chemoluminescence (SC) in their blood peaks out at 24-75 hrs and the decrease in the intensity of the luminescence observed after 15 min and 7-14 days is due to the development of nonspecific adaptation reaction. In present work these changes were studied as a function of the radiation dose. Experiments were carried out on male rats exposing them to 1, 2, 4, 6, 8 and 16 Gy, with intensity of 0.54 Gy/min, voltage 180 kV, current 10 mA, using 0.5 mm Cu + 1.0 mm Al filters and a 40 cm focal length. The dynamics of the intensity of SC in serum retained its fluctuational character of a single lethal irradiation in a wide range of doses. The curves

peaked out in an inverse proportion to the exposure dose: at day 7 with a 1 Gy dose, at day 3 with a 2 Gy, day 2 at 6 Gy, day 1 at 8 Gy and within the first minute with the 16 Gy dose. In the range of nonlethal irradiation (1-2 Gy) no relationship was noted between the peak height and the dose. In the lethal range (4-16 Gy) the peak height increased quite uniformly with the dose. The same was noted for the amplitude fluctuation of luminescence intensity in the first postexposure day. An assumption was expressed that the appearance and amplitude of these peaks are related to the rate of development of free radical peroxidation reactions, which in turn depend on initial content of active irradiation products. References 11 (Russian).
[187-7813]

UDC 577.391:621.039.58

EFFECTIVENESS OF BONE MARROW AUTOTRANSPLANTATION IN DOGS WITH DIFFERENT LEVELS OF MARROW SHIELDING

Moscow RADIOBIOLOGIYA in Russian Vol 22, No 6, Nov-Dec 82
(manuscript received 30 Jun 81) pp 832-836

KLESTOVA, O. V., SIL'CHENKO, N. N., STANZHEVSKAYA, T. I. and STRELIN, G. S., Central Scientific Research Institute of Radiology, USSR Ministry of Health, Leningrad

[Abstract] It was shown previously that migration of truncal hematopoietic cells in dogs is not stable, but a reactive, adaptive process depending on the irradiation conditions; it can be intensified in several ways, one of them being the autotransplantation of bone marrow from a shielded part of a bone. In present work an attempt was made to evaluate to what extent a bone must be shielded so that bone marrow transplanted from such a segment would still lead to increased survival of irradiated animals and to reconstruction of blood formation in the damaged area. When bone marrow from lethally irradiated animals with one shielded foot was used in autotransplantation, the survival was not significantly increased. However when the bone marrow taken before radiation exposure was used, a 75% survival of a similar group was observed. Autotransplantation of bone marrow from irradiated animals with a shin bone shielded from x-rays led to significant increase in the survival. This effect was directly proportional to the area of protected bone marrow. Figure 1; references 7: 5 Russian, 2 Western.
[187-7813]

UDC 577.391:661.879

TUMORS RESULTING FROM ACTION OF LOW DOSE CURIUM-244

Moscow RADIOBIOLOGIYA in Russian Vol 22, No 6, Nov-Dec 82
(manuscript received 5 Jan 81) pp 845-849

RUDNITSKAYA, E. I., MOSKALEV, Yu. I. and SEMENOV, A. I.

[Abstract] Experimental results were reported on the action of low dose curium-244 chloride (0.37 to 37.0 kBq/kg), administered intraperitoneally to randomly-bred female rats. This level of radioactivity showed no significant effect on the average survival rate of test animals. Multicentric development of tumors was observed with a slightly higher rate of malignant tumors in experimental group than in controls. There were no differences in tumors of hemopoietic tissue, kidneys and lungs. Experimental animals developed tumors in liver, bones, stomach and ovaries; no such tumors were observed in the control group. References 12: 10 Russian, 2 Western.
[187-7813]

UDC 577.391:661.879

EFFECT OF VACCINATION ON EXCHANGE KINETICS OF RADIOACTIVE IODINE

Moscow RADIOBIOLOGIYA in Russian Vol 22, No 6, Nov-Dec 82
(manuscript received 29 Dec 81) pp 839-841

SHAVRINA, Ye. A.

[Abstract] The effect of vaccination on the behavior of radioactive iodine was studied in rats. Endocrine glands participate actively in the reaction of organisms to vaccinations, therefore it was of interest to study the behavior of radioactive iodine in respect to these glands. Experimental results manifested increased deposits of radionuclides in thyroid gland, ovaries and adrenals. Other organs showed no difference in accumulation or secretion of $^{125}\mathrm{I}$ as compared to controls, except for blood which exhibited higher content of radionuclide in vaccinated animals 30 and 60 days after injections. Figure 1; references 7: 5 Russian, 2 Western.
[187-7813]

UDC 681.3:371.69

PLANNING AND TESTING IN GAME-DIALOGUE TRAINING SYSTEM

Moscow PRIBORY I SISTEMY UPRAVLENIYA in Russian No 11, Nov 82 pp 13-16

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[Abstract] A logical linguistic model of a game-based training is presented, which is intended for training operators of automated control systems in continuous technical processes. The training is designed to impart to the operator adequate intellectual habits necessary for distinction between real and plausible (but erroneous) causes of malfunction and to institute appropriate corrective measures. The entire automated training system consists of the game, planning, and testing subsystems involving trainee--computer--trainer dialogue. Figures 2; references 2 (Russian).
[237-12172]

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